TUGAS AKHIR – MO 141326

ANALISIS ON BOTTOM STABILITY PADA JACKET PLATFORM YANG MENGALAMI KEMIRINGAN PASCA SETTLEMENT

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Surabaya

2018

FINAL PROJECT – MO 141326

ON BOTTOM STABILITY ANALYSIS OF JACKET PLATFORM DUE TO TILT POST SETTLEMENT

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Surabaya

2018

LEMBAR PENGESAHAN

ANALISIS *ON BOTTOM STABILITY* PADA *JACKET PLATFORM* YANG MENGALAMI KEMIRINGAN *PASCA SETTLEMENT*

TUGAS AKHIR

Diajukan untuk Memenuhi Salah Satu Syarat Memperoleh Gelar Sarjana Teknik pada
Program Studi S-1 Departemen Teknik Kelautan, Fakultas Teknologi Kelautan,
Institut Teknologi Sepuluh Nopember Surabaya

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Surabaya, Januari 2018

ANALISIS *ON BOTTOM STABILITY* PADA *JACKET PLATFORM* YANG MENGALAMI KEMIRINGAN *PASCA SETTLEMENT*

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ABSTRAK

Permasalahan operasi pada struktur *jacket platform* apabila terjadi ialah kemiringan struktur. Daya dukung tanah yang kurang dapat menyebabkan struktur mengalami penurunan (*settlement*). Akibat kemiringan struktur, segala kegiatan operasional pada platform tersebut dapat diberhentikan sementara. Pada tugas akhir ini dilakukan analisis *on bottom stability* struktur platform dalam kondisi miring. Tujuan dari analisa on bottom stability ialah memperoleh nilai safety factor dari daya dukung tanah (*bearing capacity*), momen guling (*overturning moment*), dan *sliding stability* pada pondasi akibat beban lingkungan dan vertikal terhdap nilai *safety factor* yang diijinkan (API RP-2A WSD). Metoda yang digunakan dalam analisis ini ialah permodelan dengan Finite Element Method (FEM) dengan menggunakan software SACS ver. 5.6. Struktur dianalisa dalam kondisi kemiringan sampai dengan 3 derajat dan ketinggian gelombang sampai dengan 12 ft. Pada kemiringan 3 derajat diperoleh hasil akhir nilai *safety factor* terhadap stabilitas *on bottom stability* struktur. Untuk struktur dengan 3 mudmat nilai *safery factor* terhadap *bearing capacity* : 13.223, *sliding* : 2.10, dan *overturning* : 1.95. Sedangkan untuk struktur dengan full mudmat nilai *safety factor* terhadap *bearing capacity* : 13.333, *sliding* : 2.51, dan *overturning*: 2.02. Untuk struktur tanpa pondasi mudmat nilai *safety factor bearing capacity* : 12.705, sliding : 0.57, dan *overturning* : 1.54. Pada kemiringan 3 derajat ada parameter yang tidak memenuhi kriteria analisa *on bottom stability* API RP-2A WSD yaitu *sliding stability* (SF : 0.57) dan *overturning stability* (SF : 1.54). Sedangkan untuk analisa *bearing capacity* telah memenuhi kriteria API RP-2A WSD.

Kata kunci: Kemiringan Struktur, On Bottom Stability, Settlement, Bearing Capacity, Overturning Moment, Jacket Platform

ON BOTTOM STABILITY ANALYSIS OF JACKET PLATFORM DUE TO TILT POST SETTLEMENT

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ABSTRACT

The most problematical operation of offshore fixed structure is tilting condition of the structure. A poor bearing capacity of the foundation can cause settlement of the structure. Due to the tilt of the structure, all operational activities on the platform could be suspended. The main purpose of the on-bottom stability analysis is to obtain factor of safety from bearing capacity, overturning moments, and sliding stability of the foundation due to environmental and lateral loads allowed on (API RP-2A WSD). Finite Element Method (FEM) software SACS will be used to perform modeling of the structure. The result of this final project is to obtain the minimum safety factor of the structure stability from the on bottom stability analysis consists of bearing capacity, overturning moments, and sliding stability up to 3 degree tilt and 12 feet wave height. Thus, factor of safety is obtained from the on bottom analysis of 3 mudmat structure with bearing capacity factor of safety : 13.223, sliding stability factor of safety : 2.10, overturning stability factor of safety : 1.95. While for the on bottom stability analysis of full mudmat whereas bearing capacity factor of safety : 13.333, sliding stability factor of safety : 2.51, overturning stability factor of safety : 2.02. Then, for the on bottom stability analysis of structure without mudmat with bearing capacity factor of safety : 12.705, sliding stability factor of safety : 0.57, and overturning stability factor of safety : 1.54. It concludes that the structure with full mudmat fulfil all the criteria of on bottom stability analysis as from the recommendation on API RP-2A WSD due to tilt. Whereas structure without mudmat could not fulfil 2 of 3 parameters on bottom stability analysis due to sliding stability (SF : 0.57) and overturning stability (SF : 1.54).

Keywords: Structure Tilt, On Bottom Stability, Settlement, Bearing Capacity, Overturning Moment, Jacket Platform

KATA PENGANTAR

Segala puji dan syukur penulis panjatkan kepada Allah SWT yang telah memberikan rahmat serta hidayah hingga akhirnya penulis mampu menyelesaikan Tugas Akhir dengan judul **"Analisis *On Bottom Stability* Pada *Jacket Platform* yang mengalami kemiringan *Pasca Settlement*".**

Tugas Akhir ini disusun guna memenuhi persyaratan dalam menyelesaikan Studi Kesarjanaan (S-1) di Departemen Teknik Kelautan, Fakultas Teknologi Kelautan (FTK), Institut Teknologi Sepuluh Nopember Surabaya (ITS). Tugas Akhir ini membahas tentang *on bottom stability jacket platform* yang mengalami kemiringan setelah terjadi *settlement* yang analisanya dilakukan di Departemen Teknik Kelautan, FTK, ITS.

Penulis sangat mengharapkan agar tugas akhir ini mampu memberikan ilmu pengetahuan dalam lingkup rekayasa kelautan serta dapat dikembangkan kedalam penelitian yang lebih intensif dan ekstensif.

Penulis sangat bangga mampu menyelesaikan analisa kemiringan struktur tersebut dan telah disusun dalam buku tugas akhir ini. Penulis minta maaf apabila ada kesalahan penulisan dalam buku tugas akhir ini. Oleh karena itu, diharapkan adanya saran dan masukan sebagai penyusunan dalam pengembangan tugas akhir ini di masa mendatang. Akhir kata penulis berharap bahwa tugas akhir ini dapat digunakan sebagai acuan demi kemajuan di bidang kelautan.

UCAPAN TERIMA KASIH

Dalam pengerjaan Tugas Akhir ini penulis menyampaikan terima kasih kepada semua pihak yang telah membantu dan juga penulisann tugas akhir ini, meliputi :

1. Allah SWT atas limpahan rahmat dan nikmatnya sehingga penulis dapat menyelesaikan tugas akhir ini.
2. Keluarga penulis yang selalu memberikan doa dan dukungan.untuk dalam pengerjaan tugas akhir
3. Bapak Ir. Murdjito, M.Sc. Eng. selaku dosen pembimbing I atas segala bimbingan yang dimudahkan dalam pengerjaan tugas akhir ini.
4. Bapak Ir. Handayanu, M.Sc., Ph.D. selaku dosen pembimbing II yang telah memberikan waktunya dan masukan kepada penulis dalam menyelesaikan tugas akhir ini.
6. Bapak Dr. Eng. Rudi Walujo Prastianto, S.T., M.T., selaku Ketua Jurusan Teknik Kelautan
7. Bapak Herman Pratikno, S.T., MT.,Ph.D selaku koordinator tugas akhir yang selalu mengerti dan memberikan toleransi ketika mendaftar sidang sehingga dimudahkan dalam prosesnya.
8. Temen - temen MAELSTROM L-32 yang saling *support* untuk bisa segera lulus.

Surabaya, Januari 2018

Reynaldi Rovi Ramadhan

DAFTAR ISI

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DAFTAR SIMBOL

Q	: Tekanan Dasar pada Pondasi (kips/f^2)
P_u	: Beban Struktur (kips)
A	: Luas Area Efektif Pondasi (f^2)
M_n	: Momen Akibat Beban Gelombang (kips.ft)
W	: Modulus tampang pondasi mat (f^4)
S_u	: Undrained Shear Strength Soil (kips/f^2)
c_u	: Undrained Shear Strength Soil di Mudline (kips/f^2)
D	: Kedalaman Pondasi (ft)
B	: Lebar Pondasi (ft)
L	: Lebar Pondasi (ft)
H_{max}	: Tinggi Gelombang Maksimum (ft)
T_{max}	: Periode Gelombang Maksimum (ft)
H	: Tahanan Geser Tanah (kips)
H_E	: Gaya lateral yang bekerja pada dasar pondasi (kips)
Fx	: Gaya yang bekerja searah sumbu X (kips)
Fy	: Gaya yang bekerja searah sumbu Y (kips)
I	: Momen Inersia (kips.ft^2)
Mot	: Moment Overturning akibat lingkungan (kips.ft)
Mp	: Moment Resistance Pile (kips.ft)
P	: Axial Pile Capacity (kips)
a	: Panjang Lengan Pengembali (ft)

SF	: Safety Factor
d	: Kedalaman Air (ft)
P-δ	: Momen P Delta (kips.ft)

DAFTAR LAMPIRAN

BAB I

PENDAHULUAN

1.1 Latar Belakang

Salah satu anjungan lepas pantai yang digunakan di Indonesia yaitu *Jacket Offshore Platform,* bangunan struktur lepas pantai yang terdiri atas tiga bagian utama yaitu *Top Deck*, *Intermediate Template* (Jacket), dan *Bottom Pile Foundation*. Komponen bagian pada struktur *Jacket platform* tersebut dibuat dan dirancang sesuai dengan kedalaman laut tempat beroperasi. Anjungan lepas pantai sendiri memiliki jenis yang beragam. Namun jenis *jacket platform* dinilai lebih ekonomis dan efisien dalam hal pembuatan dan perawatan dibanding dengan jenis anjungan lepas pantai lainnya. *Jacket platform* merupakan jenis struktur yang banyak digunakan di Indonesia karena kedalaman perairan di Indonesia pada umumnya tidak terlalu dalam, sehingga digunakan tipe *jacket platform* sebagai salah satu solusi dalam eksplorasi minyak bumi dan gas alam.

Setiap struktur selalu menerima beban, berdasarkan API RP 2A WSD 21st *edition*, jenis pembebanan yang harus dipertimbangkan dalam perancangan struktur bangunan lepas pantai meliputi beban mati (*Dead Loads*), beban hidup (*Live Loads*), beban lingkungan, beban konstruksi, beban pengangkatan dan reinstalasi.

Saat proses *upending jacket* dari posisi terapung horizontal menuju ke posisi vertikal mendekati permukaan tanah (*near-seabed*), struktur *jacket* harus didukung oleh komponen pondasi pada saat pemasangan pile. Fase sementara ini disebut "*on bottom stability".*

Pondasi adalah bagian elevasi terendah dari bangunan *(substructure)* yang berfungsi meneruskan beban konstruksi ke tanah atau batuan yang berada di bawahnya. Pondasi diklasifikasikan menjadi dua, yaitu pondasi dalam dan pondasi dangkal. Pondasi dalam didefinisikan sebagai pondasi yang meneruskan beban bangunan ke tanah keras atau batu yang terletak relatif jauh dari permukaanm contoh : pondasi sumuran dan pondasi tiang. Sedangkan pondasi dangkal didefinisikan sebagai pondasi yang mendukung bebannya secara

langsung, seperti pondasi telapak, pondasi memanjang dan pondasi rakit. (Bowles, 1996)

Komponen pondasi yang berada di atas permukaan tanah (*seabed)* meliputi*, jacket leg extensions,* elevasi terendah struktur yaitu *jacket horizontal bracing* dan *mudmat*. Sedangkan untuk pondasi dalam meliputi pile itu sendiri. Pondasi-pondasi tersebut harus didesain agar mampu mendukung berat struktur *jacket* dengan mempertimbangkan beban lingkungan terhadap *sliding stability* dan *overturning moment* yang diijinkan. Pada tahap desain struktur, perlu memperhatikan kemampuan daya dukung tanah *(bearing capacity)* dalam menerima beban dari struktur dan lingkungan terhadap pondasi.

Penurunan tanah (*settlement*) yang diakibatkan oleh beban vertical dari struktur *jacket platform*. Berbeda dengan *subsidence* yang disebabkan oleh penurunan tanah akibat pengeboran minyak bumi sehingga kandungan tanah berkurang. Penurunan tanah yang sangat berbahaya ialah *differential settlement* yang akan mengakibatkan perbedaan penurunan pada tiap kaki pondasi. Hal tersebut sangat berbahaya karena dapat menyebabkan kemiringan pada salah satu sisi kaki pondasi serta mengganggu kinerja operasi *platform.*

Pada tugas akhir ini untuk mengetahui stabilitas struktur *jacket platform* yang mengalami kemiringan akibat *settlement*, perlu dilakukan analisa *on bottom stability* pada struktur tersebut.

1.2 Perumusan Masalah

Permasalahan yang akan dikaji dalam tugas akhir ini adalah:

1. Berapa besar daya dukung *(bearing capacity*) tanah terhadap pondasi mudmat akibat kemiringan dengan variasi ketinggian gelombang ?
2. Bagaimana stabilitas *overturning* akibat kemiringan dengan variasi ketinggian gelombang ?
3. Bagaimana stabilitas *sliding* akibat kemiringan dengan variasi ketinggian gelombang?

1.3 Tujuan Penelitian

Tujuan yang ingin dicapai oleh penulis adalah sebagai berikut:

1. Mengetahui besar daya dukung (*bearing capacity)* tanah terhadap pondasi *mudmat* dengan variasi ketinggian gelombang

2. Mengetahui stabilitas *overturning* akibat kemiringan *platform* dengan variasi ketinggian gelombang
3. Mengetahui stabilitas *sliding* akibat kemiringan *platform* dengan variasi ketinggian gelombang

1.4 Manfaat Penelitian

Manfaat yang diharapkan dari penulisan tugas akhir ini adalah dapat digunakan sebagai bahan pertimbangan untuk analisa *on bottom stability* pada *jacket* akibat kemiringan platform dengan variasi ketinggian gelombang sehingga mampu menahan beban lingkungan dan konstruksi.

1.5 Batasan Masalah

Untuk memperjelas permasalahan tugas akhir ini, maka perlu adanya ruang lingkup pengujian atau asumsi-asumsi sebagai berikut :

a. Analisis dilakukan pada *Platform* miring yang beroperasi di perairan Jawa
b. Pemodelan dan analisis struktur menggunakan software SACS
c. Analisa dari struktur *jacket* ditinjau berdasarkan standart code API RP-2A WSD 21st *edition*
d. *Scouring* dan *marine growth* diabaikan
e. P-Delta effect yang digunakan merupakan analisis linear
f. Analisa platform miring dimodelkan dengan platform tegak tetapi dengan memasukkan p-delta effect dikarenakan kesulitan pemodelan

1.6 Sistematika Penulisan

Sistematika penulisan yang digunakan dalam penyusunan laporan tugas akhir ini terdiri atas lima bab yaitu sebagai berikut :

BAB I pendahuluan menjelaskan beberapa hal tentang penelitian dalam tugas akhir, yaitu masalah yang melatar belakangi penelitian sehingga penting untuk dilakukan, perumusan masalah yang menjadi problem dan perlu dijawab, tujuan yang digunakan untuk menjawab permasalahan yang diangkat, manfaat apa yang didapat dari dilakukannya penelitian tugas akhir, batasan dari penelitian tugas akhir ini, serta penjelasan dari sistematika laporan yang digunakan dalam tugas akhir.

BAB II tinjauan pustaka dan dasar teori menjelaskan apa saja yang menjadi acuan dari penelitian tugas akhir ini serta dasar-dasar teori, persamaan-persamaan, serta code yang digunakan dalam penelitian tugas akhir ini. Materi yang dicantumkan pada bab ini antara lain: pengertian umum struktur anjungan pantai, konsep pembebanan, konsep tegangan, konsep parameter tanah, konsep *jacket overturning moment*, konsep *jacket sliding stability*, dan konsep bearing capacity tanah.

BAB III metodologi penelitian menjelaskan urutan analisis yang dilakukan unuk menyelesaikan permasalahan dan melakukan validasi dalam tugas akhir ini, beserta pembahasan data.

BAB IV analisis hasil dan pembahasan menjelaskan tentang pemodelan struktur dengan menggunakan software yang mendukung serta berisi analisis yang dilakukan dalam tugas akhir ini, pengolahan dan serta membahas hasil yang telah didapat.

BAB V kesimpulan dan saran menjelaskan tentang kesimpulan yang telah didapatkan dari hasil analisa pada tugas akhir ini dan saran-saran penulis sebagai pertimbangan dalam keperluan penelitian selanjutnya.

Daftar pustaka yang berisi referensi-referensi yang dipakai selama penelitian.

BAB II
TINJAUAN PUSTAKA DAN DASAR TEORI

2.1 Tinjauan Pustaka

Analisis *on bottom stability* adalah analisis statis *non-linier* yang bertujuan untuk mengetahui besarnya momen pengembali struktur terhadap momen guling yang bekerja. Analisis dilakukan dengan cara menentukan letak titik berat struktur dan jarak ujung pondasi terhadap beban lateral yang mengenai struktur. Pada tahap awal fabrikasi, struktur tidak diberi pondasi *mudmat* sehingga dapat mengakibatkan *settlement* yang cukup besar. *Settlement* juga bisa disebabkan oleh perubahan kondisi lingkungan saat kondisi operasi, maka dari itu perlu diketahui stabilitas struktur dan *settlement* yang terjadi jika diberi pondasi *mudmat*.

Analisis stabilitas pondasi telah dilakukan oleh beberapa mahasiswa Departemen Teknik Kelautan, Fakultas Teknologi Kelautan, ITS dengan berbagai variasi latar belakang. Untuk latar belakang akibat ketinggian gelombang telah dianalisa oleh Christof Manurung (2008) dengan judul "Analisa Pengaruh Gelombang Terhadap *On Bottom Stability* Pada Struktur *Jacket West Lobe Wellhead Platform*". Serta untuk latar belakang stabilitas pondasi sistem mat yang tidak dipancang pada struktur *jack up* hanya diletakkan diatas dasar laut *(sea-bed)* berjudul "Analisis Kekuatan dan Stabiliyas pondasi MOgPU *Platform* di Perairan Natuna" oleh Muhammad Kadafi (2004).

Hingga saat ini belum ada penelitian mengenai analisis *on bottom stability* akibat kemiringan pada *platform pasca settlement. Settlement* adalah penurunan permukaan tanah akibat beban vertikal dari struktur. *Settlement* terbagi menjadi dua, yaitu *uniform settlement* dan *differential settlement. Uniform Settlement* tergolong aman dengan batas penurunan tanah tertentu. Namun jika *settlement yang* terjadi secara *differential,* maka akan mengakibatkan perbedaan kemiringan pada setiap ujung pondasi. Sebagai pembanding maka, penulis memberikan variasi berupa *mudmat* yang akan dibandingkan stabilitas pondasinya akibat kemiringan *pasca settlement*. Oleh karena itu, apabila analisis ini dilakukan pada tiap tahap desain dan perancangan *platform*, hasil dari stabilitas struktur dapat menjadi pertimbangan.

2.2 Dasar Teori

2.2.1 *Offshore Structure*

Anjungan lepas pantai telah berkembang yang dibuktikan dengan adanya berbagai jenis *offshore structure* di lepas pantai yang berfungsi sebagai *production platform*, *wellhead platform*, *service platform*, maupun fungsi yang lain. Beberapa konsep struktur bangunan lepas pantai, antara lain (Ainillah, 2016) :

a. *Floating Offshore Structure* (Struktur Terapung)

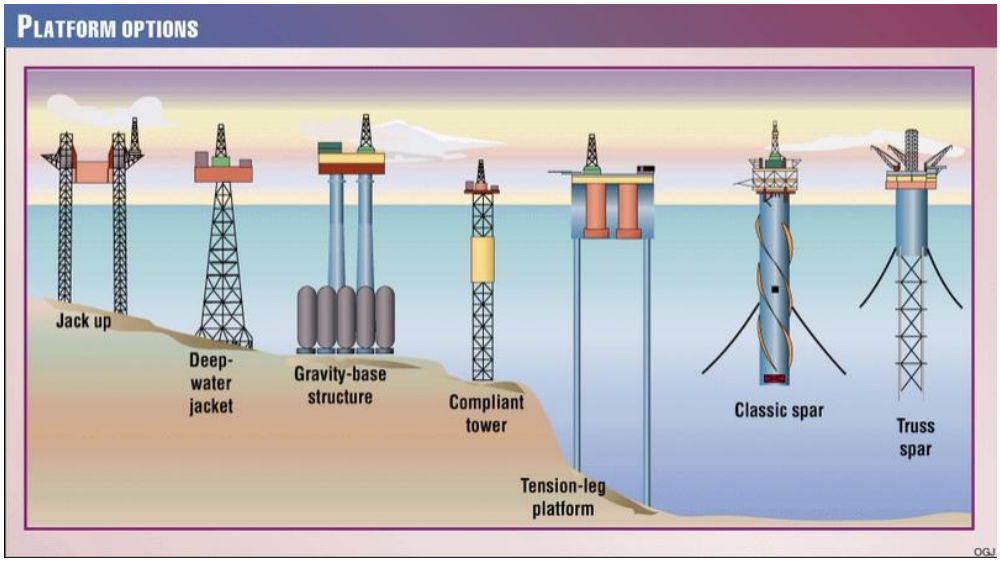
   Tipe ini mempunyai karakter bergerak mengikuti gerakan gelombang. Seringkali anjungan ini dihubungkan dengan dasar laut menggunakan peralatan mekanik *mooring line* atau *dynamic positioning*. Untuk anjungan tipe ini yang utama adalah mobilitas dan kemampuannya mengantisipasi gerakan akibat gelombang dan arus laut.

b. *Fixed Offshore Structure* (Struktur Terpancang)

   Pada konstruksi terpancang, beban vertikal, horizontal dan moment dapat ditransformasikan oleh konstruksi pondasi ke dasar laut. Tipe ini merupakan tipe paling tua dan paling banyak dibangun. Salah satu kelemahannya adalah biaya produksi dan biaya instalasi struktur baja akan naik secara eksponensial terhadap kedalaman. Contoh nya yaitu *jacket*, *jack up platform*.

c. *Compliant Structure* (Struktur Lentur)

   Anjungan tipe ini bertujuan untuk memenuhi persyaratan fungsi-fungsi khusus seperti faktor ekonomi dan faktor teknis. Prinsip perencanaan umum anjungan struktur lentur adalah mendapatkan solusi optimal terhadap persyaratan-persayaratn fungsi-fungsi tersebut. Beberapa contoh dari tipe ini diantara nya *Tension Leg Platform*.



Gambar 2.1 *Offshore Structure* (Rudi, 2016)

2.2.2 *Fixed Offshore Structure*

Tipe anjungan ini memanfaatkan kekuatan dari kakinya yang didukung oleh konfigurasi *member* (*brace*) dan *pile* yang tertancap sangat dalam agar mampu menahan beban vertikal akibat beban fungsional, berat struktur dan fasilitas pendukung serta menahan beban horizontal dan momen lentur akibat beban lingkungan (angin, gelombang, arus, dan lain-lain). *Jacket* dan *Jack Up Platform* yang merupakan anjungan lepas pantai terpancang yang mulai digunakan sejak awal industri lepas pantai, struktur ini dipancang dengan *pile* yang mempunyai *lateral stiffness* untuk menahan beban gelombang, arus, angin pada kedalaman air sekitar 0-400 meter (Prihantika, 2013).

Jacket platform merupakan struktur terpancang (*fixed structure*) yang terdiri atas beberapa komponen utama yaitu :

1. *Deck / Topside* berfungsi sebagai penyokong peralatan, pengeboran dan kegiatan yang dikerjakan di atas air. *Deck* berada pada ketinggian tertentu di atas MSL. *Deck* dibagi-bagi menjadi beberapa tingkat sesuai dengan kebutuhan dan fungsi yang dibutuhkan.
2. *Jacket* berupa konstruksi pipa turbular yang sebagian besar terendam air hingga dasar laut. Berfungsi untuk melindungi *pile* agar tetap berada pada posisinya, menyokong *deck* dan melindungi *conductor* serta menyokong

sub-struktur lainnya seperti *boat landing*, *barge bumper* dan lain-lain. Elemen utama struktur *jacket* antara lain *braces, joint, jacket leg, riser, deck leg*.

3. *Pile* diletakkan didalam kaki *jacket* akan dipancangkan pada dasar laut. Antara *pile* dengan *jacket* terkadang dilakukan *grounting* untuk menambah kekakuan dan agar *pile* dan *jacket* menyatu. Fungsi utama tiang pancang adalah sebagai pondasi struktur *jacket* untuk meneruskan beban axial dan lateral yang ditransformasikan ke tanah. Untuk itu selain karakteristik pondasi *jacket platform* selain ditentukan oleh perancangan tiang pancang itu sendiri juga ditentukan oleh kondisi tanah yang ada (*soil mechanics*).

2.2.3. Teori Perencanaan Beban

Pada suatu proses perancangan bangunan lepas pantai, untuk menentukan kemampuan kerja suatu struktur akan dipengaruhi oleh menentukan akurasi atau ketepatan beban yang akan diterapkan dalam perancangan. Adapun beban-beban yang harus dipertimbangkan dalam perancangan bangunan lepas pantai adalah sebagai berikut :

1. Beban mati (*Dead Load*)
2. Beban hidup (*Live Load*)
3. Beban lingkungan (environmental Load)
4. Beban akibat kecelakaan (*Accidental Load*)

1) Beban Mati (*Dead Load*)

Beban mati (*dead load*) adalah beban dari komponen-komponen kering serta beban-beban dari peralatan, perlengkapan dan permesinan yang tidak berubah dari mode operasi pada suatu struktur. Adapun beban mati tersebut dapat dikelompokkan sebagai berikut :

a) Berat dari struktur bangunan lepas pantai, seperti tiang pancang, bangunan atas, *jacket, deck, railing, grout, paint, stiffners* dan lain-lain;
b) Berat peralatan dan permesinan yang tidak digunakan untuk pengeboran atau proses pengeboran;
c) Berat perlengkapan tambahan lain yang dipasang permanen pada struktur, seperti *boad landing, risers, barge bumper*.

2) Beban Hidup (*Live Load*)

Beban hidup (*live load*) adalah beban yang terjadi pada *platform* atau bangunan lepas pantai selama operasi masih berlangsung dan tidak ada perubahan terhadap fungsinya. Adapun yang termasuk beban hidup (*live load*) dapat digolongkan sebagai berikut :

a) Berat peralatan pengeboran (*drilling*)
b) Berat peralatan produksi
c) Berat akomodasi, *living quarter, helipod,* dan peralatan pendukung lainnya
d) Berat cairan yang terdapat dalam tangki-tangki
e) Beban akibat gaya-gaya yang terjadi pada struktur dari operasi

3) Beban Lingkungan (*Environmental Load*)

Beban lingkungan (*Environmental Load*) adalah beban yang terjadi pada suatu struktur yang disebabkan oleh lingkungan atau kejadian alam. Beban lingkungan yang biasanya digunakan dalam perancangan adalah:

a) Beban gelombang
b) Beban angin
c) Beban arus
d) Beban gempa
e) Beban *Vortex Sedding*

4) Beban Akibat Kecelakaan (*Accidental Load*)

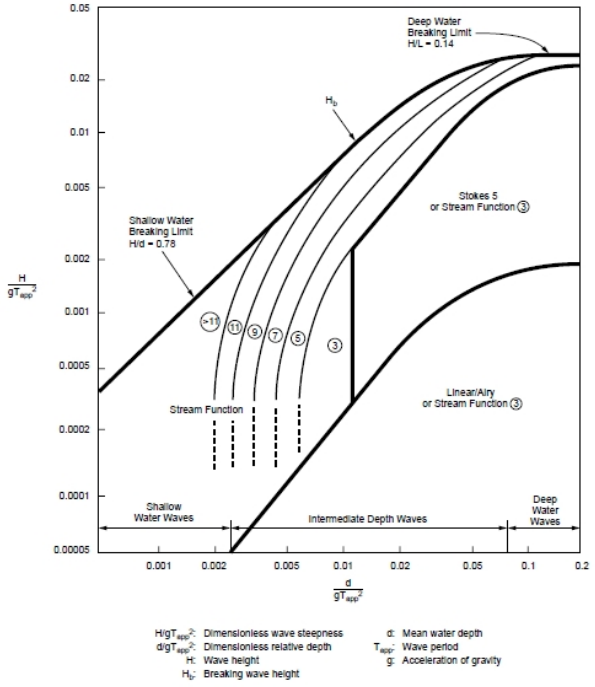
Beban kecelakaan (*accidental load*) merupakan beban yang tidak dapat diduga sebelumnya yang terjadi pada suatu bangunan lepas pantai. Beban kecelakaan ini terjadi akibat dari:

a) Tabrakan dengan kapal pemandu operasi
b) Putusnya tali katrol (*crane*)
c) Putusnya tali tambat (rantai jangkar, tali baja pengikat katrol)
d) Kebakaran, letusan, *blow out*
e) Benda yang jatuh mengenai deck, dan lain-lain.

2.3 Konsep Gelombang

Dalam perhitungan beban gelombang, ada beberapa teori gelombang yang dapat digunakan misalnya teori gelombang Airy atau Stokes 5^{th}orde. Dari ketentuan yang berlaku pada teori gelombang tersebut, kemudian dilakukan analisa terhadap kondisi perairan dari struktur yang akan dibangun untuk memperoleh kecepatan dan percepatan secara vertikal maupun horisontal partikel fluida untuk setiap kedalaman. Kecepatan dan percepatan merupakan fungsi dari tinggi gelombang (H), periode gelombang (T), kedalaman perairan (d), jarak pertikel dari dasar laut (z), dan waktu (t). Penentuan teori gelombang disesuaikan dengan grafik validitas teori gelombang dengan berdasarkan parameter H/gT^2 dan d/gT^2 (Chakrabarti, 2005).

Dalam perhitungan beban gelombang, maka teori gelombang yang digunakan disesuaikan dengan grafik validitas teori gelombang. Validitas teori gelombang ini dikembangkan oleh R. G. Dean (1988) dan B. Le Mehaute (1970) (Chakrabarti, 1987) seperti terlihat pada gambar.



Gambar 2.2. Grafik validasi teori gelombang (API RP 2A WSD, 2002)

Diagram ini membagi daerah yang berlaku bagi masing-masing teori gelombang berdasarkan perbandingan H/gT^2 sebagai ordinat dan d/gT^2 sebagai absis. Penentuan teori gelombang ini berdasarkan pada data lingkungan struktur tersebut diinstalasi, seperti tinggi gelombang H (ft, m), kedalaman d (ft, m) dan periode gelombang T (detik). Teori gelombang yang sering dipakai dalam analisa struktur bangunan lepas pantai ialah teori gelombang linier airy dan teori gelombang non-linier stokes orde 5.

Perhitungan panjang gelombang pada perairan tertentu secara teoritis dapat dihitung dengan rumusan berikut :

$$\boldsymbol{L = gT^2/2} \tag{2.1}$$

Untuk memperkecil kesalahan yang mungkin terjadi, maka dilakukan beberapa kali iterasi sampai errornya 0.0001.

$$k = 2\pi/L \tag{2.2}$$

$$L = \frac{gT^2}{2\pi}\tanh(k\ ) \tag{2.3}$$

Beban gelombang yang bekerja merupakan penjumlahan dari gayga-gaya yang timbul, yaitu drag force, intertia force dan Froude-Krylov force. Dengan menggunakan pendekatan maka suku liner (Drag force) dapat dijumlahkan secara langsung dengan suku non-linier (inertia Force dan Froude-Krylov Force). Maka untuk analisa gelombang selanjutnya digunakan persamaan sebagai berikut (Morison, 1950) yang berlaku apabila D/π < 0.2 :

$$F = {}^1/_2\ C_d\,\rho\,D/u/u \tag{2.4}$$

$$F_i = C_m\,\rho\,A\,u \tag{2.5}$$

$$F = F_i + F_d \tag{2.6}$$

Keterangan :

- C_d adalah koefesien drag
- C_m adalah koefesien inersia
- ρ adalah massa jenis air laut (Kg/m^3)
- D adalah diameter silinder (m)
- A adalah luasan penampang (m^2)
- u adalah kecepatan horizontal fluida (m/dt)

- u adalah percepatan horizontal partikel fluida (m/d^{2})

2.3.1 Gaya gelombang air laut

Beban gelombang air laut merupakan beban lingkungan yang paling dominan dan bekerja secara terus menerus (dinamis/siklis) selama struktur beroperasi. Pada umumnya gelombang yang terjadi pada laut adalah gelombang acak (random). Tetapi untuk memahami karakteristik gelombang laut yang bersifat ramndom tersebut sering digunakan analisa pendekatan matematis dengan jalan menggabungkan gelombang-gelombang reguler dengan cara menganalisa spektra gelombang.

Teori gelombang laut reguler yang digunakan dalam penulisan ini adalah teori gelombang Airy. Komponen-komponen gelombang mudah ditentukan, sehingga sangat praktis penerapannya.

Profil gelombang sinusoidal dapat diformulasikan sebagai berikut :

$$\varsigma = \frac{H}{2}\cos(k \quad - \omega \ ) \tag{2.7}$$

Keterangan :

ς = Profil permukaan gelombang

H = Tinggi gelombang

k = angka gelombang = $2\pi/\lambda$

ω = Frekuensi gelombang

λ =Panjang gelombang

Kecepatan partikel dari gelombang *Airy* dapat dirumuskan :

$$u = \frac{\omega}{2}\frac{\mathrm{c}}{\mathrm{s}}\frac{k}{k}(k \quad - \omega \ ) \tag{2.8}$$

$$v = \frac{\omega}{2}\frac{\mathrm{s}}{\mathrm{s}}\frac{k}{k}(k \quad - \omega \ ) \tag{2.9}$$

Sedangkan untuk percepatan partikel air berlaku :

$$a_x = \frac{\omega^2 H}{2}\frac{\mathrm{c}}{\mathrm{s}}\frac{k}{k}s \quad (k \quad - \omega \ ) \tag{2.10}$$

$$a_y = \frac{\omega^2 H}{2}\frac{\mathrm{s}}{\mathrm{s}}\frac{k}{k}c \quad (k \quad - \omega \ ) \tag{2.11}$$

Keterangan :

u = kecepatan partikel air arah horisontal (m/det)

v = kecepatan partikel air arah vertikal (m/det)

a_x= percepatan partikel air arah horisontal (m/d^{2})

a_y= percepatan partikel air arah vertikal (m/d ^{2})

d = kedalaman air (m)

y = sumbu vertikal (m)

2.3.2 Teori Gelombang Stokes Orde 5

Teori stokes orde 5 ini ditemukan oleh Skjelbreia (1959) dan Wiegel (1964) yang digunakan dalam analisis keakuratan pada kecuraman gelombang H/λ. Teori ini kemudian dikembangkan oleh Skjelbreia dan Hendrickson (1961). Persamaan kecepatan partikel air berawal dari persamaan berikut :

$$u = \frac{\partial \emptyset}{\partial \emptyset} \tag{2.12}$$

$$w = \frac{\partial \emptyset}{\partial} = \frac{\partial \emptyset}{\partial} \tag{2.13}$$

Dari persamaan di atasm didapat persamaan kecepatan partikel air seperti di bawah ini :

$$u = C \sum_{n=1}^{5} nF_n \cos n \quad \cosh n \tag{2.14}$$

$$w = C \sum_{n=1}^{5} nF_n \sin n \quad \sinh n \tag{2.15}$$

Dari persamaan kecepatan di atas didapat differensial berupa percepatan partikel air laut sebagai berikut :

$$\frac{\partial}{\partial} = kc^2 \sum_{n=1}^{5} n^2 F_n \sin n \quad \cosh n \tag{2.16}$$

$$\frac{\partial}{\partial} = kc^2 \sum_{n=1}^{5} n^2 F_n \cos n \quad \sinh n \tag{2.17}$$

Persamaan profil gelombang (η) pada *Still Water Level* (SWL) adalah :

$$\eta = \frac{1}{k} \sum_{n=1}^{5} nF_n \cos(k \quad - \omega \ ) \tag{2.18}$$

Untuk mendapatkan harga F_n diperlukan perhitungan sebagai berikut :

S = sinh kd θ = kx – ωt (2.19)

C = cosh kd k = $2\pi/L$ (2.20)

$C = \frac{g}{2\pi} \tanh k$ = kecepatan gelombang (*celerity*) (2.21)

2.4 Konsep Tegangan

Tegangan timbul akibat adanya tekanan, tarikan, bengkokan, dan reaksi. Pada pembebanan tarik terjadi tegangan tarik. Pada pembebanan tekan terjadi tegangan tekan, begitu pula pada pembebanan yang lain.

2.4.1 Konsep Tegangan Normal

Tegangan normal terjadi akibat adanya reaksi yang diberikan pada benda sehingga akan timbul tegangan yang menyatakan aksi terbesar yang terjadi secara internal antara elemen-elemen. Analisa tegangan dengan metode statis ini berdasarkan Hukum Hooke yang menganggap bahan bersifat elastis linier, sehingga prinsip superposisi bisa digunakan untuk menggabungkan tegangan akibat berbagai sistem pembebanan (Popov, 1993).

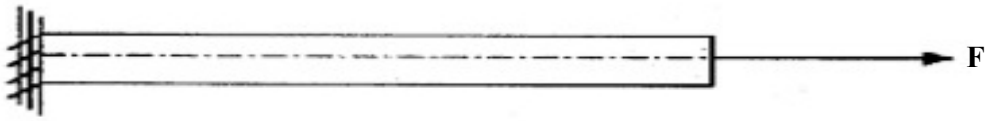
Jika suatu batang tubular yang mengalami pembebanan aksial sebesar F dengan luas penampang A. Sehingga tegangan yang terjadi pada batang sesuai dengan Persamaan 2.2. sebagai berikut :

$$\sigma = \frac{F}{A} \tag{2.22}$$

Dengan, σ = Tegangan

F = Pembebenan aksial

A = Luas Penampang



Gambar 2.3 Pembebanan Aksial Pada Batang Tubular (*Popov*, 1993)

2.4.2 Tegangan Tarik Aksial

Apabila sepasang gaya tarik aksial menarik suatu batang, dan akibatnya batang ini cenderung menjadi meregang atau bertambah panjang. Maka gaya tarik aksial tersebut menghasilkan tegangan tarik pada batang di suatu bidang yang terletak tegak lurus atau normal terhadap sumbunya. Tegangan tarik aksial yang diizinkan σ_t menurut ISO 19902, untuk member silinder yang mengalami beban tarik aksial dapat ditentukan dengan :

$$\sigma_t \leq \frac{f_t}{\gamma_{R,t}} \tag{2.23}$$

Dengan, σ_t = Tegangan tarik aksial akibat gaya yang terfaktor

f_t = Kekuatan tarik aksial (ksi)

$\gamma_{R,t}$ = 1,05 ; Faktor ketahanan untuk tegangan tarik aksial

Gambar 2.4 Gaya Tarik Aksial

2.4.3 Tegangan Tekan Aksial

Apabila sepasang gaya tekan aksial mendorong suatu batang, akibatnya batang ini cenderung untuk memperpendek atau menekan batang tersebut. Maka gaya tarik aksial tersebut menghasilkan tegangan tekan pada batang disuatu bidang yang terletak tegak lurus atau normal terhadap sumbunya. Tegangan tekan aksial yang diizinkan σ_t menurut ISO 19902, untuk member silinder yang mengalami beban tarik aksial dapat ditentukan dengan :

$$\sigma_c \leq \frac{f_c}{\gamma_{R,c}} \tag{2.24}$$

Dengan, σ_c = Tegangan tekan aksial akibat gaya yang terfaktor

f_c = Kekuatan tarik aksial (ksi)

$\gamma_{R,c}$ = 1,18 ; Faktor ketahanan untuk tegangan tekan aksial

Gambar 2.5 Gaya Tekan Aksial

2.5 Parameter Tanah

Perlu diketahui spesifikasi kualitas tanah di lokasi pemasangan pondasi. Dalam melakukan analisis dibutuhkan data tanah yang akurat. Oleh karena itu, perlu pemahaman mengenai perilaku tahanan geser tanah agar mampu menganalisa stabilitas tanah seperti tekanan lateral pada tanah, struktur tanah, daya dukung tanah, dan faktor lainnya. Dalam perhitungan daya dukung tanah, perlu diperhatikan beberapa faktor yang mempengaruhi kapasitas daya dukung tanah yaitu :

a) Sudut Friksi Dalam (*Internal Friction Angle*)

Pada tanah berjenis pasir, terdapat sudut friksi internal. Sudut friksi tersebut dapat didefinisi sebagai tahanan friksi tanah bersamaan dengan tegangan normal efektif tanah. Sudut friksi dinyatakan dalam derajat. Semakin rapat konsentrasi pasir pada tanah, maka semakin besar pula nilai sudut friksinya.

b) *Poisson's Ratio*

Nilai besaran Poisson's Ratio digunakan pada studi penurunan *(settlement)* dan tekanan serta didefinisikan sebagai perbandingan antara tekanan axial *(axial compression)* dan tekanan lateral *(lateral compression)*.

Tabel 2.1 Besaran Nilai *Poisson's Ratio* (*Bowles*, 1996)

Values or value ranges for Poisson's ratio μ

Type of soil	μ
Clay, saturated	0.4–0.5
Clay, unsaturated	0.1–0.3
Sandy clay	0.2–0.3
Silt	0.3–0.35
Sand, gravelly sand	– 0.1–1.00
commonly used	0.3–0.4
Rock	0.1–0.4 (depends somewhat on type of rock)
Loess	0.1–0.3
Ice	0.36
Concrete	0.15
Steel	0.33

c) Modulus Elastisitas

Nilai modulus elastisitas tanah atau modulus young merupakan rasio tegangan dan regangan. Range nilai modulus young tanah dapat dilihat pada table berikut :

Tabel 2.2 Range Nilai Tegangan-Regangan Modulus Young (*Bowles*, 1996)

Value range* for the static stress-strain modulus E_s for selected soils (see also Table 5-6)

Field values depend on stress history, water content, density, and age of deposit

Soil	E_s, MPa
Clay	
Very soft	2–15
Soft	5–25
Medium	15–50
Hard	50–100
Sandy	25–250
Glacial till	
Loose	10–150
Dense	150–720
Very dense	500–1440
Loess	15–60
Sand	
Silty	5–20
Loose	10–25
Dense	50–81
Sand and gravel	
Loose	50–150
Dense	100–200
Shale	150–5000
Silt	2–20

*Value range is too large to use an "average" value for design.

d) Kohesi

Kuat geser tanah atau kohesi merepresentasikan gaya yang menarik molekul tanah untuk saling terikat. Pada tiap jenis tanah lempung terdapat nilai kohesi yang berbeda-beda.

e) Berat Jenis Tanah

Berat jenis tanah γ merupakan nilai perbandingan berat tanah (W) dengan volume tanah (V). Dengan keterangan :

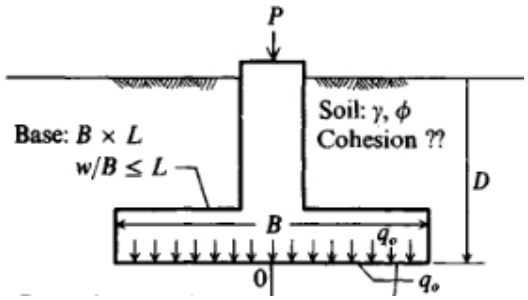
γ = Berat Jenis Tanah (kN/m^3)

W = Berat Tanah (kN)

V = Volume Tanah (m^3)

2.6 Pondasi Dangkal *(Shallow Foundation)*

Pondasi dangkal adalah bagian bangunan yang terpendam dengan nilai kedalaman D/B ≤ 1. Penyebaran beban pada pondasi dangkal yaitu secara lateral yang disebut *spread footing*. Perbandingan nilai D/B ≤ 1 dapat digambarkan sebagai berikut :



Gambar 2.6. Pondasi Dangkal (*Bowles*, 1996)

Sesuai dengan API RP 2A WSD-2000, hal-hal yang perlu menjadi pertimbangan dalam tahap desain pondasi dangkal ialah sebagai berikut :

1) Stabilitas struktur yang dapat diakibatkan oleh momen guling *(overturning moment), bearing,* dan gesekan *(sliding).*
2) Deformasi statis pada pondasi yang disebabkan oleh kerusakan pada bagian-bagian struktur pondasi maupun fasilitas lainnya
3) Karakteristik yang diakibatkan oleh pondasi terhadap respons struktur itu sendiri dan kemampuan pondasi terhadap beban dinamis yang bekerja
4) Ketidakstabilan *hydraulic* pada perpipaan akibat beban gelombang yang bisa menjadi potensi kerusakan struktur dan pondasi
5) Instalasi dan pelepasan termasuk penetrasi pada dasar pondasi itu sendiri.

Berikut merupakan jenis pondasi dangkal menurut Bowles :

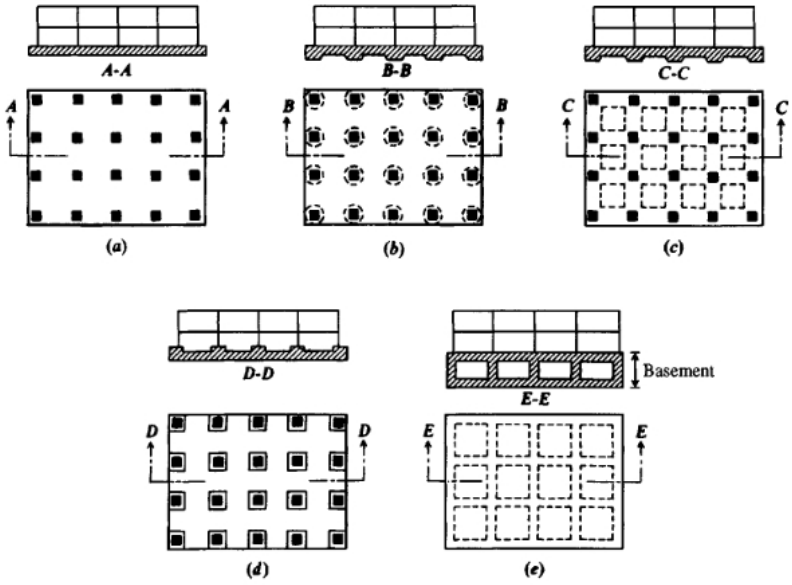
Foundation types and typical usage

Foundation type	Use	Applicable soil conditions
	Shallow foundations (generally $D/B \leq 1$)	
Spread footings, wall footings	Individual columns, walls	Any conditions where bearing capacity is adequate for applied load. May use on a single stratum; firm layer over soft layer or soft layer over firm layer. Check settlements from any source.
Combined footings	Two to four columns on footing and/or space is limited	Same as for spread footings above.
Mat foundations	Several rows of parallel columns; heavy column loads; use to reduce differential settlements	Soil bearing capacity is generally less than for spread footings, and over half the plan area would be covered by spread footings. Check settlements from any source.

Gambar 2.7. Jenis Pondasi Dangkal (*Bowles*, 1996)

Selain *spread footings, wall footings,* dan *combined footings*, terdapat *Mat foundations* yang pada bagian *jacket platform* disebut *mud mat*. Pondasi mat

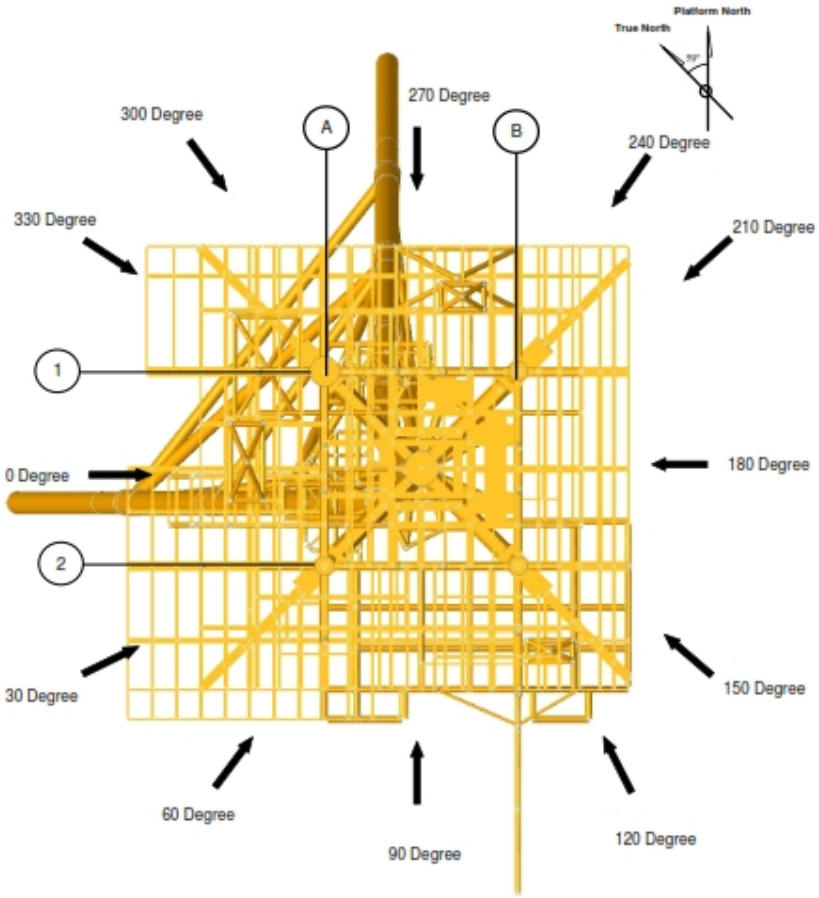
digunakan apabila di dasar permukaan tanah (*seabed*) memiliki kualitas kapasitas bearing yang rendah. Pondasi mat juga disupport dengan pondasi pile pada situasi dimana pada dasar tanah dapat terjadi penurunan tanah yang besar (*large settlement*).



Gambar 2.8. Jenis *mat foundation* : (a) *Flat plate,* (b) *plate thickened under columns*, (c) *waffle-slab,* (d) *pedestals plate*, (e) *basement wall*.
(Sumber : *Bowles*, 1996)

2.7 On Bottom Stability

Analisa on bottom stability pada *jacket* dengan 12 arah gelombang datang. Berikut merupakan gambaran *jacket* diakibatkan oleh arah gelombang datang :



Gambar 2.9. Arah datang gelombang pada *platform*

2.7.1 Overturning Stability

Momen guling (*overturning stability)* sebuah struktur berkaitan dengan momen yang terjadi pada struktur tersebut. Momen tersebut diakibatkan oleh gaya-gaya lateral yang mengenai struktur *jacket*. Suatu struktur akan mempertahankan posisinya agar tetap pada posisi semula dikarenakan oleh beban *payload* terhadap beban lateral yang bekerja, keadaan ini disebut *restraint moment. Jacket overturning stability* diperhitungkan dengan menggunakan *ratio resistance* pada overtuning moment.

Formulasi untuk *jacket weight restraint moment* akibat beban *payload*

$$M_p = P \, . \, a$$

(2.25)

Formulasi untuk *overturning moment* akibat beban lateral yang bekerja :

$$M_w = F_w \, . h$$

(2.26)

Nilai faktor *overturning resistance* minimum yang direkomendasikan oleh API RP2A WSD yaitu 2.0 :

$$\frac{M_p}{M_w} \geq 2.0$$

(2.27)

Dengan :

M_p = momen pengembali (kips.ft)

P = kapasitas axial pilehead (kips)

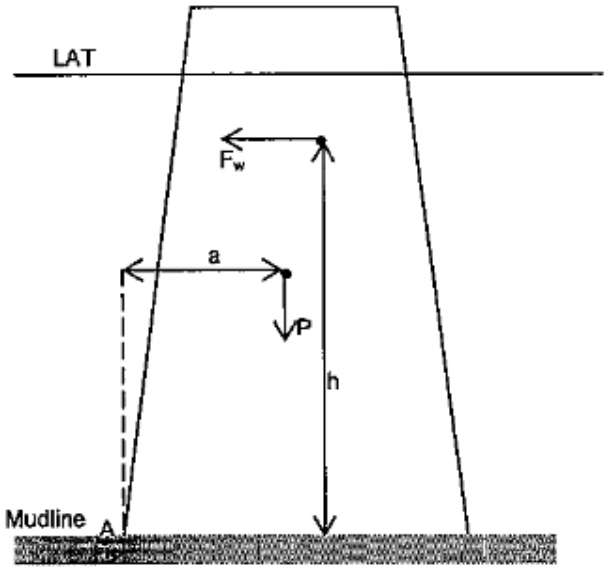
a = jarak dari titik pilehead terhadap ujung pondasi (ft)

M_w = momen guling (kips.ft)

F_w = beban lateral (kips)

h = jarak dari titik berat *jacket* terhadap dasar pondasi (ft)

Berikut gambaran stabilitas overturning :



Gambar 2.10. *Jacket Overturning Stability*

2.7.2 Sliding Stability

Pada saat pondasi berada di atas tanah terdapat beban-beban horizontal yang bekerja. Beban horizontal tersebut ialah beban lateral yang bekerja pada dasar pondasi. Apabila gaya lateral yang bekerja melebihi nilai tahanan geser tanah

(sliding resistance) dapat menyebabkan pondasi mengalami keruntuhan (*failure)*. *Sliding resistance* untuk tanah diperhitungkan sesuai API RP 2A WSD yaitu :

$$H = c_u \, . A \tag{2.28}$$

Dengan :

H = tahanan geser tanah (kips)

c_u = gaya geser pada level dasar ($k \quad /f^{\,2}$)

A = luas pondasi mudmat ($f^{\,2}$)

H_E = gaya lateral yang bekerja pada dasar pondasi (kips)

Nilai faktor *sliding resistance* minimum yang direkomendasikan oleh API RP2A WSD yaitu 1.5 :

$$\frac{H}{H_E} \geq 1.5 \tag{2.29}$$

2.7.3 Kapasitas Daya Dukung Tanah

Analisis daya dukung tanah *(soil bearing capacity)* menghasilkan nilai kemampuan tanah akibat beban struktur yang bekerja di atasnya. Maka untuk menghitung besar tekanan pada dasar pondasi *mudmat* dengan menggunakan persamaan sebagai berikut :

$$Q = \frac{P_u}{A} \pm \frac{M_n}{W} \tag{2.30}$$

Dengan :

Q = tekanan dasar pada pondasi (kips/$f^{\,2}$)

P_u = beban struktur (kips)

A = luas area efektif pada pondasi ($f^{\,2}$)

M_n = momen akibat beban gelombang (kips.ft)

W = modulus tampang pondasi mat

Kemampuan tanah dalam memikul beban maksimum yang diizinkan di atasnya disebut dengan daya dukung tanah. Daya dukung ultimate tanah (ultimate bearing capacity) adalah daya kemampuan tanah pada batas runtuh. Daya dukung tanah yang diperbolehkan (*allowable bearing capacity*) dihitung setelah mendapatkan nilai daya dukung ultimate untuk keperluan desain dan analisis. Daya dukung tanah perlu dihitung dan dipertimbangkan dalam pembuatan

pondasi dangkal, agar pondasi tidak menimbulkan tekanan berlebihan pada tanah di bawahnya, karena tekanan berlebihan akan mengakibatkan keruntuhan. Untuk menentukan kapasitas ultimate bearing capacity pada pondasi dangkal pada tanah kohesif, maka digunakan persamaan skempton sebagai berikut :

$$Q_u = 5S_u\left(1 + \frac{0.2D}{B}\right)\left(1 + \frac{0.2B}{L}\right) \quad (2.31)$$

Dengan :

Q_u = daya dukung ultimate tanah (kips/$f^{\ 2}$)

S_u = kuat geser tanah rata-rata (kips/$f^{\ 2}$)

D = kedalaman pondasi (ft)

B = lebar pondasi (ft)

L = panjang pondasi (ft)

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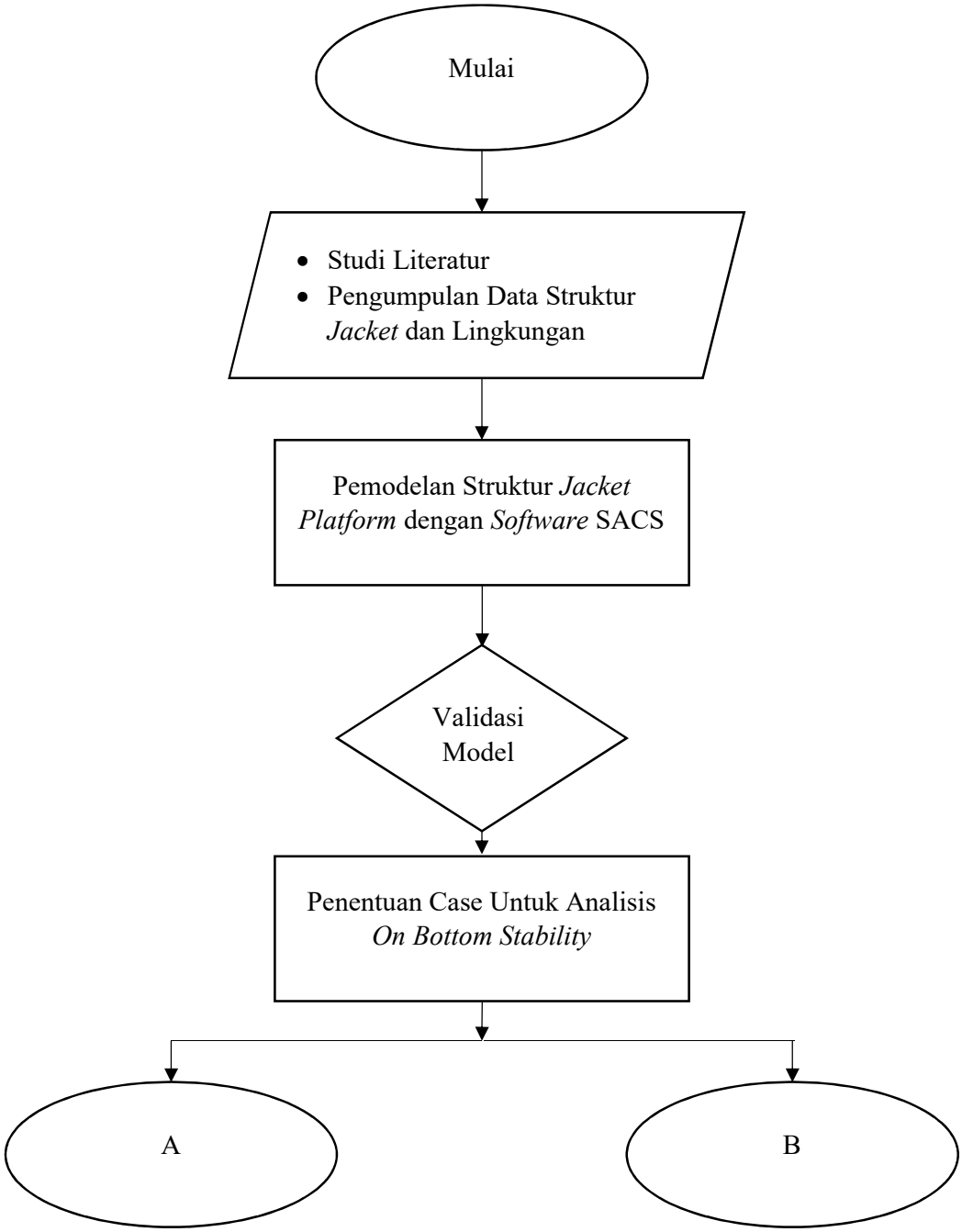
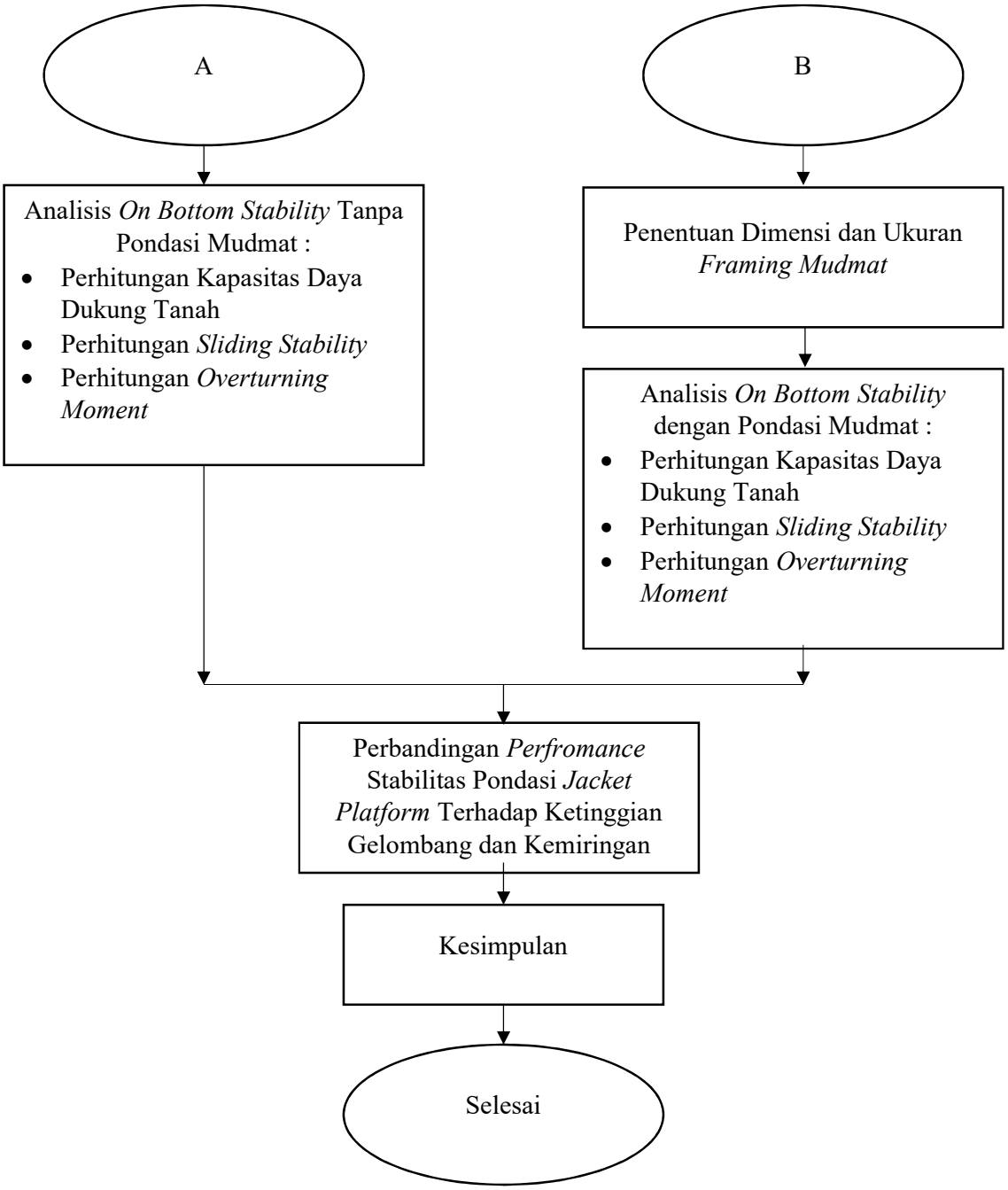
BAB III
METODOLOGI PENELITIAN

3.1. Diagram Alir Metodologi Penelitian

Penjelasan mengenai tugas akhir dapat dilihat pada Gambar 3.1:



Gambar 3.1. Diagram Alir Pengerjaan Tugas Akhir



Gambar 3.1. Diagram Alir Pengerjaan Tugas Akhir (Lanjutan)

3.2. Prosedur Penelitian

Berdasarkan diagram alir penelitian diatas, berikut merupakan prosedur dan langkah-langkah penelitian dalam mencapai tujuan Tugas Akhir ini dijelaskan sebagai berikut:

1. Studi Literatur

   Studi dan pengumpulan literature sebgai bahan-bahan referensi dan sumber teori-teori yang diperlukan dalam penyelesaian Tugas Akhir kali ini.

2. Pengumpulan Data

   Data yang dibutuhkan berupa data struktur, data lingkungan, data pembebanan dan data tanah pada struktur *Jacket*.

3. Pemodelan Struktur *Jacket Platform* dengan *Software* SACS

   Pemodelan *Jacket* beserta *appurtenance* berdasarkan desain struktur dengan software SACS dan memasukan beban jacket.

4. Validasi Model

   Pembuktian dengan menyamakan berat struktur *Jacket* yang dimodelkan dengan berat struktur sesungguhnya. Validasi selalu dibutuhkan dalam tahap pemodelan. Hal ini bertujuan untuk membuktikan bahwa struktur yang dimodelkan sudah dapat mewakili struktur sesungguhnya.

5. Penentuan *Case* Untuk Analisis *On Bottom Stability*

   Menentukan case untuk pembebanan pada *software SACS.*

6. Penentuan Dimensi dan Ukuran *Framing Mudmat*

   Menentukan dimensi dan ukuran *framing mudmat* yang akan dilanjutkan dengan kalkulasi perhitungan luas area pondasi dan modulus tampang pondasi *mudmat*.

7. Analisis *On Bottom Stability*

   Melakukan analisis *on bottom stability* pada struktur dengan ketentuan :

   a) Analisis On Bottom Stability Tanpa Pondasi *Mudmat*
   b) Analisis On Bottom Stability dengan Pondasi *Mudmat*

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BAB IV

ANALISA HASIL DAN PEMBAHASAN

4.1 Data Struktur

Data struktur *jacket platform* meliputi :

- Tipe Platform : Braced Monopod
- Jumlah Leg : 3 Leg, 1 Guardian Sleeve, 2 Jacket Leg Sleeve
- Jumlah Pile : 3 Pile, 1 Caisson Pile (OD:56”), 2 Battered Pile (OD:36”)
- Jumlah Elevasi Deck : 4 Deck
- Jumlah Boatlanding : 2 Boat Landing
- Jumlah Riser : 2 Riser
- Jumlah Riser Guard : 1 Riser Guard
- Jumlah Konduktor : 3 Konduktor saat ini, 2 yang akan diinstall
- Jumlah Sump Caisson : 1 Sump Caisson

Analisis data lingkungan yang digunakan dalama analisa *on bottom stability* tugas akhir ini ialah sebagai berikut :

- Kedalaman perairan saat instalasi : 193.60 ft
- Kecepatan arus saat operasi (1-year) :

Tabel 4.1 Data kecepatan arus 1 & 100 tahunan

Percent of Depth (%) Above Seabed	Current Speed (ft/sec)	
	1-year	100-years
0	1.313	2.362
10	1.502	2.702
20	1.658	2.983
30	1.757	3.161
40	1.831	3.293
50	1.890	3.400
60	1.940	3.490
70	1.983	3.567
80	2.021	3.636
90	2.056	3.698
100	2.087	3.754

- Variasi data gelombang sebagai berikut :

Tabel 4.2 Data variasi ketinggian dan periode gelombang

Kondisi Operasi	Gelombang Operasi (1 tahunan)			
Hmax(ft)	3	6	9	12
T(s)	2.97	4.36	5.24	5.82

4.2 Validasi Struktur

Validasi terhadap pemodelan berdasarkan berat struktur. Diperoleh berat struktur pemodelan sebesar 2918.04 kips sedangkan berat struktur sesungguhnya sesuai Weight Control Report sebesar 2918.02 kips. Diperoleh koreksi berat struktur tidak melebihi 5% maka model dinyatakan valid.

Tabel 4.3 Hasil perhitungan validasi model

Load Case	Basic Load Case	Basic Load SACS (kips)	Contingency Factor	Berat yang Difaktorkan (kips)	WCR (kips)
DEAD LOAD STRUCTURE	a) Topside Structural Dead Load	1404.1008	1.0576	1484.98	419.60
	b) Guardian Sleeve Structural Dead Load		1.0576		653.56
	c) Caisson and Batter Piles (above mudline)		1.0576		450.29
105	Deck NGDL	245.71	1.10	270.28	282.20
110	Guardian Sleeve NGDL	77.86	1.10	85.65	91.66
115	Piping Operating Load on Main Deck	15.86	1.10	17.45	176.96
120	Piping Operating on Mezzanine Deck	40.02		44.02	
125	Piping Operating on Cellar Deck	77.2		84.92	
130	Piping Operating on Sub Cellar Deck	30.93		34.02	
260	Live Load on Open Area Main Deck	154.57	1.10	170.03	540.00
261	Live load on Laydown Area Main Deck	28.53		31.38	
262	Live Load on Escape Route Area Main Deck	71.24		78.36	
265	Live Load on Open Area Mezzanine Deck	10.12		11.13	
266	Live Load on Escape Route Mezzanine Deck	57.16		62.88	
270	Live Load on Open Area Cellar Deck	111.94		123.13	
271	Live Load on Laydown Area Cellar Deck	7.69		8.46	
272	Live Load on Escape Route Area Cellar Deck	58.28		64.11	
275	Live Load on Open Area Sub Cellar	8.51		9.36	
276	Live Load on Escape Route Sub Celar	25.69		28.26	
277	Live Load on Open Area Boat Landing	6.57		7.23	
280	Mechanical Operating Load	251.76	1.10	276.94	283.72
285	Electrical Load	18.37	1.10	20.21	12.98
290	Instrument Load	4.77	1.10	5.25	7.05
TOTAL				2918.04	2918.02

Tabel 4.4 Koreksi hasil pemodelan SACS dengan WCR

Platform	Berat Struktur (kips)		Koreksi (%)
	Data WCR	Pemodelan SACS	
Structure	2918.02	2918.04	0.000514

4.3 Pemodelan Kemiringan Struktur

Analisis on Bottom Stability dengan variasi kemiringan berdasar P-Delta Effect yang diakibatkan oleh pergerseran titik berat (CoG Shift) :

Pada **Gambar 4.1** Struktur tanpa mudmat dengan besar beban searah Fz = 2574.410 kips diketahui P-Delta pada **Tabel 4.5** :

Tabel 4.5 Besar P-Delta effect struktur tanpa pondasi mudmat

Deg	P-δx (Kips-ft)
0	0
0.5	4496.145
1.0	8982.314
1.5	13458.165
2.0	17923.358
2.5	22377.552
3.0	26820.409

Pada **Gambar 4.2a** Struktur dengan 3 pondasi mudmat dengan besar beban searah Fz = 2606.639 kips diketahui P-Delta pada **Tabel 4.6** :

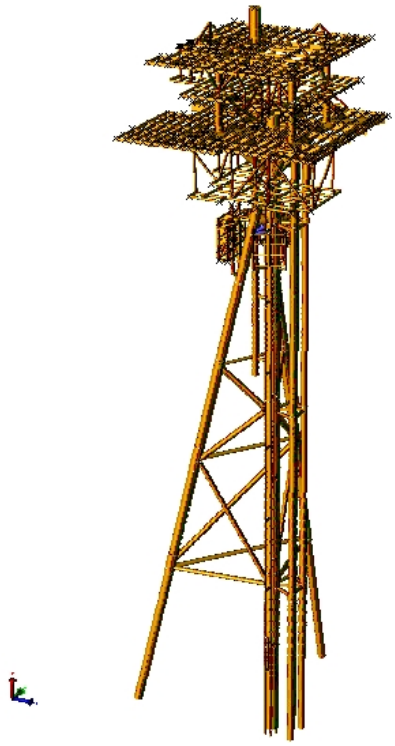
Tabel 4.6 Besar P-Delta effect struktur 3 pondasi mudmat

Deg	P-δx (Kips-ft)
0	0
0.5	4552.433
1.0	9094.764
1.5	13626.648
2.0	18147.740
2.5	22657.696
3.0	27156.174

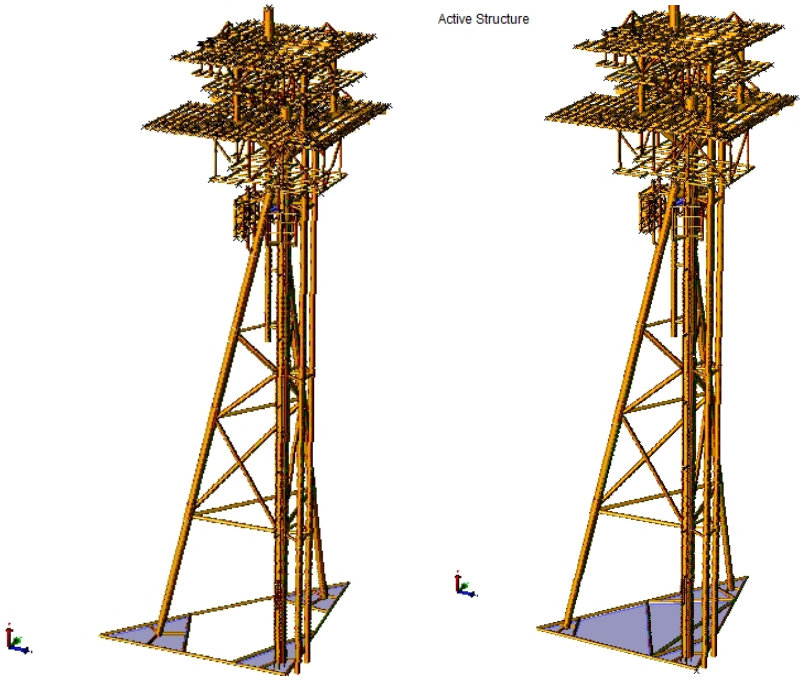
Pada **Gambar 4.2a** Struktur dengan full pondasi mudmat dengan besar beban searah Fz = 2624.8 kips diketahui P-Delta pada **Tabel 4.7** :

Tabel 4.7 Besar P-Delta effect struktur full pondasi mudmat

Deg	P-δx (Kips-ft)
0	0
0.5	4584.150
1.0	9158.129
1.5	13721.587
2.0	18274.179
2.5	22815.557
3.0	27345.376

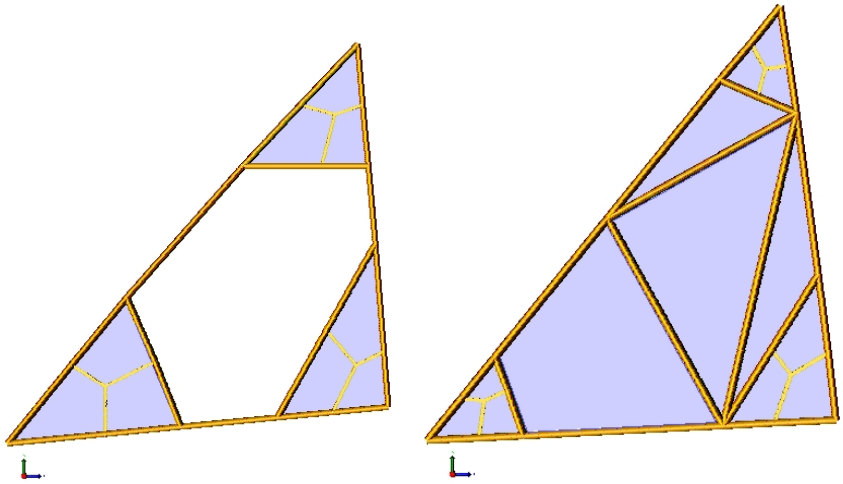


Gambar 4.1 Struktur tanpa pondasi mudmat



(a) (b)

Gambar 4.2a Struktur dengan pondasi 3 mudmat, **Gambar 4.2b** struktur dengan full pondasi mudmat



(c) (d)

Gambar 4.2c pondasi 3 mudmat @el -190ft, **Gambar 4.2d** pondasi full mudmat @el -190ft

4.4 Analisa Bearing Capacity Tanpa Mudmat

Analisa Bearing capacity dilakukan terhadap caisson pile yang ditinjau pasca mengalami settlement. Persamaan perhitungan ultimate bearing capacity yang direkomendasikan API RP-2A WSD yaitu :

$$Q_d = Q_f + Q_p = fA_s + qA_p$$

Dengan :

Q_f = tahanan geser pile (kips)

Q_p = total *end bearing* (kips)

f = besar nilai tahanan geser (kips/f^2) = 5.075 kips/f^2

A_s = luas permukaan sisi pile (f^2)

q = besar nilai *end bearing capacity* (kips/f^2)= 4.803 kips/f^2

A_p = luas permukaan dasar pile (f^2)

Sehingga diperoleh besar ultimate bearing capacity caisson pile (125 m) :

$Q_d = fA_s + qA_p$

$$Q_d = (5.075)\ x\ \left(2\pi\ x\ {}^{O}/_{2}\ x\ p \qquad\qquad d \quad h\right)$$
$$+ (4.803)\ x\ \left(\pi\left({}^{O}/_{2}{}^{2}\right)\right)$$

$$Q_d = (5.075)\ x\ \left(2\pi\ x\ {}^{4.67}/_{2}\ x\ 410.105\right) + (4.803)\ x\ \left(\pi\left({}^{4.67}/_{2}{}^{2}\right)\right)$$

$$Q_d = 30535 + 82.269$$

$$Q_d = 30{,}617.3\ k$$

Diketahui besar axial load caisson pile (P_c) sebesar 2409.8 kips dari output sacs, sehingga safety factor untuk bearing capacity pile sebesar :

$$S \quad = \frac{Q_d}{P_c} = \frac{30{,}617.3}{2409.8} = 12.705 > 2\ (A \quad R \ \ 2A\,W \quad)$$

4.5 Analisa Bearing Capacity 3 Mudmat

Analisa daya dukung menghasilkan besar nilai kemampuan tanah dalam mendukung beban struktur di atasnya. Daya dukung yang dimaksud ialah tahanan geser tanah untuk melawan penurunan akibat pembebanan, yaitu tahanan geser yang mampu ditempa oleh tanah sepanjang bidang geser dengan persamaan sebagai berikut :

$$Q = \frac{P_u}{A} \pm \frac{M_n}{W} \qquad (4.1)$$

Dengan :

Q = tekanan dasar pada pondasi (kips/$f^{\ 2}$)

P_u = beban struktur (kips)

A = luas area efektif pada pondasi ($f^{\ 2}$)

M_n = momen akibat beban gelombang (kips.ft)

W = modulus tampang pondasi mat

Dari hasil output SACS, sebagaimana pada **Gambar 4.3**, diketahui bahwa Beban Ultimate (P_u) ialah sebesar 2606.639 kips, didapatkan dari reaksi total maksimum vertical (Fz) dan terjadi pada kondisi operasional dengan tinggi gelombang 12 ft.

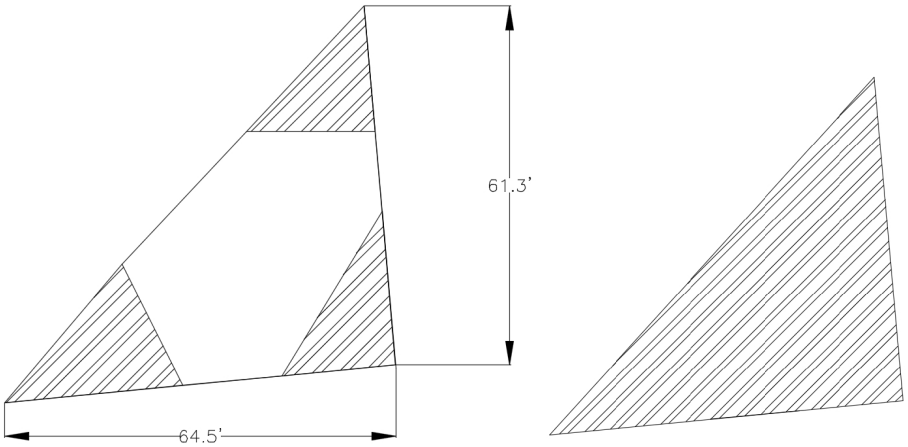
59 1100 1.0 * GRVT + 1.0 * LIV + 2.0 * 305

GRVT 100.00 1.1 * 2 + 1.1 * 105 + 1.1 * 110 + 1.1 * 115 + + + +
LIV 100.00 1.0 * 260 + 1.0 * 261 + 1.0 * 262 + 1.0 * 265 + + + +
305 200.00 USER GENERATED LOADS

	FX (KIPS)	FY (KIPS)	FZ (KIPS)	MX (FT-KIPS)	MY (FT-KIPS)	MZ (FT-KIPS)
GRVT	0.000	0.000	-2044.293	-1787.606	-11837.298	0.000
LIV	0.000	0.000	-540.296	2599.663	-1592.253	0.000
305	0.000	0.000	-22.050	-286.650	-286.650	0.000
TOTAL	0.000	0.000	-2606.639	525.407	-13716.201	0.000

Gambar 4.3 Besar beban ultimate struktur 3 mudmat

Untuk mendapatkan besar nilai tekanan pada dasar pondasi (Q), maka parameter yang diperlukan untuk perhitungan selanjutnya ialah luas area pondasi (A), dalam hal ini merupakan luasan ekivalen dari bentuk sesungguhnya *triangle* **(Gambar 4.4a)** ekivalen dengan luasan **(Gambar 4.4b)** dengan rasio Panjang (L) dan lebar (B) yang sama. Lalu, untuk mengetahui momen inersia bidang dapat menggunakan hasil output dari *command massprop* di *autocad* pada **(Gambar 4.5)**. Sedangkan untuk momen akibat gelombang dihasilkan dari output SACS.



(a) (b)

Gambar 4.4 Dimensi pondasi 3 mudmat sesungguhnya (a) dan luasan penampang ekivalen (b)

```
----------------   REGIONS   ----------------

Area:                      2090
Perimeter:                 290.7
Bounding box:           X: 92.8  --  175.0
                        Y: 130.1  --  213.3
Centroid:               X: 143.5
                        Y: 158.8
Moments of inertia:     X: 32160761.9
                        Y: 26451783.5
Product of inertia:    XY: -28801248.0
Radii of gyration:      X: 160.7
                        Y: 145.8
Principal moments and X-Y directions about centroid:
                        I: 718374 along [0.7 0.7]
                        J: 363313.6 along [-0.7 0.7]
```

Gambar 4.5 Dimensi ukuran pondasi 3 mudmat

Dari output perhitungan di autocad pada **Gambar 4.5** didapatkan dimensi-dimensi pondasi 3 mudmat yaitu : dimensi pondasi ekivalen adalah sebesar 64.5 ft (lebar) dan 61.3 ft (panjang), dengan luasan ekivalen sebesar 2090 f^2. Sedangkan untuk parameter dx dan dy untuk mencari modulus tampang pondasi dari titik centroid bidang sebesar 38.6 ft (dx), 41.7 ft (dy). Sedangkan untuk momen akibat beban lingkungan yang bekerja diketahui pada **Tabel 4.8.**

Tabel 4.8 Beban lingkungan yang bekerja pada kemiringan 3 Derajat

LOAD CASE			
H=12 ft |T=5.82 s			
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)
0 Degree	X Direction	119.12	-25919.4
	Y Direction	-2.05	2194.2
30 Degree	X Direction	103.34	-30445.8
	Y Direction	55.25	-9650.0
60 Degree	X Direction	60.33	-39799.0
	Y Direction	99.03	-18703.5
90 Degree	X Direction	1.01	-125450.3
	Y Direction	116.18	-22138.3
120 Degree	X Direction	-58.14	-62124.3
	Y Direction	100.04	-18682.2
150 Degree	X Direction	-100.25	-71577.5
	Y Direction	56.92	-9738.5
180 Degree	X Direction	-114.03	-74666.7
	Y Direction	-0.67	-940.9
210 Degree	X Direction	-97.44	-70613.0
	Y Direction	-56.76	14015.2
240 Degree	X Direction	-56.26	-61855.8
	Y Direction	-98.07	22510.1
270 Degree	X Direction	0.99	-169978.1
	Y Direction	-114.33	25718.1
300 Degree	X Direction	58.84	-37508.1
	Y Direction	-100.37	22611.6
330 Degree	X Direction	103.12	-28318.7
	Y Direction	-59.23	14027.4

Sehingga diketahui untuk tekanan pada dasar pondasi sebagai berikut :

$$Q = \frac{P_u}{A} \pm \frac{M_x d_y}{I_x} \pm \frac{M_y d_x}{I_y}$$

$$Q_I = \frac{P_u}{A} - \frac{M_x d_y}{I_x} + \frac{M_y d_x}{I_y}$$

$$Q_I = \frac{2606.639}{2090} - \frac{-169978.1\ x\ 41.7}{718374} + \frac{25718.1\ x\ 38.6}{363313.6}$$

$$Q_I = 13.846\ k \quad /f^{\ 2}$$

Selanjutnya, untuk perhitungan daya dukung ultimate dihitung dengan menggunakan persamaan sebagai berikut (Skempton, 1951) :

$$Q_u = 5S_u\left(1 + \frac{0.2D}{B}\right)\left(1 + \frac{0.2B}{L}\right) \qquad (4.2)$$

Dengan :

Q_u = daya dukung ultimate tanah (kips/$f^{\ 2}$)

S_u = kuat geser tanah rata-rata (kips/$f^{\ 2}$) = 1.14868 kips/$f^{\ 2}$

D = kedalaman pondasi (ft) = 9.84 ft

B = lebar pondasi (ft) = 64.5 ft

L = panjang pondasi (ft) = 61.3 ft

Dari persamaan daya dukung pondasi mat (Skempton), diketahui besar daya dukung ultimate untuk pondasi pada struktur 3 mudmat pada kedalaman 3 m (9.84 ft) yaitu :

$$Q_u = 5S_u\left(1 + \frac{0.2D}{B}\right)\left(1 + \frac{0.2B}{L}\right)$$

$$Q_u = 5\ x\ 1.14868\left(1 + \frac{0.2\ x\ 9.84}{64.5}\right)\left(1 + \frac{0.2\ x\ 64.5}{61.3}\right)$$

$$Q_u = 7.175\ \text{kips}/f^{\ 2}$$

Lalu, untuk mengetahui kemampuan tanah dalam memberikan daya dukung terhadap stuktur, maka dilakukan cek keamanan dengan menggunakan *safety factor*, jika *safety factor* lebih dari 2 (API RP-2A WSD) maka struktur disebut aman dari keruntuhan terhadap daya dukungnya.

$S = \frac{Q_u}{Q_I}$, jika SF>2 maka struktur aman (API RP-2A WSD) (4.3)

Dengan :

Q_u = daya dukung ultimate tanah

Q_I = besar tekanan pada pondasi

$$S = \frac{7.175}{13.846} = 0.518$$

Sehingga safety factor total ialah :

$$S = S\ 3\ m + S\ p$$

$$S = 0.518 + 12.705$$

$$S = \mathbf{1}\ .\mathbf{2}$$

Perhitungan saat kondisi operasi arah gelombang datang 270 derajat dengan kemiringan 3 derajat dan ketinggian gelombang 12 ft, dengan SF sebesar **13.223** $>$ 2 **(Tabel 4.9).**

Tabel 4.9 Hasil perhitungan struktur 3 mudmat 12 arah gelombang 3 derajat kemiringan

LOAD CASE				3 Mudmat Pressure 3 Degree						
H=12 ft |T=5.82 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	119.12	-25919.4	-0.024	-0.490	2.985	2.519	2.985	7.175	15.109
	Y Direction	-2.05	2194.2							
30 Degree	X Direction	103.34	-30445.8	-1.545	0.505	1.989	4.040	4.040	7.175	14.481
	Y Direction	55.25	-9650.0							
60 Degree	X Direction	60.33	-39799.0	-3.050	0.924	1.570	5.545	5.545	7.175	13.999
	Y Direction	99.03	-18703.5							
90 Degree	X Direction	1.01	-125450.3	-8.387	-3.683	6.177	10.881	10.881	7.175	13.364
	Y Direction	116.18	-22138.3							
120 Degree	X Direction	-58.14	-62124.3	-4.344	-0.374	2.868	6.838	6.838	7.175	13.754
	Y Direction	100.04	-18682.2							
150 Degree	X Direction	-100.25	-71577.5	-3.942	-1.873	4.367	6.437	6.437	7.175	13.820
	Y Direction	56.92	-9738.5							
180 Degree	X Direction	-114.03	-74666.7	-3.187	-2.987	5.481	5.681	5.681	7.175	13.968
	Y Direction	-0.67	-940.9							
210 Degree	X Direction	-97.44	-70613.0	-1.363	-4.341	6.835	3.857	6.835	7.175	13.755
	Y Direction	-56.76	14015.2							
240 Degree	X Direction	-56.26	-61855.8	0.048	-4.735	7.229	2.446	7.229	7.175	13.698
	Y Direction	-98.07	22510.1							
270 Degree	X Direction	0.99	-169978.1	-5.887	-11.352	13.846	8.382	13.846	7.175	13.223
	Y Direction	-114.33	25718.1							
300 Degree	X Direction	58.84	-37508.1	1.472	-3.332	5.827	1.022	5.827	7.175	13.936
	Y Direction	-100.37	22611.6							
330 Degree	X Direction	103.12	-28318.7	1.094	-1.887	4.381	1.401	4.381	7.175	14.343
	Y Direction	-59.23	14027.4							

4.6 Analisa Bearing Capacity Full Mudmat

Analisa daya dukung menghasilkan besar nilai kemampuan tanah dalam mendukung beban struktur di atasnya. Daya dukung yang dimaksud ialah tahanan geser tanah untuk melawan penurunan akibat pembebanan, yaitu tahanan geser yang mampu ditempa oleh tanah sepanjang bidang geser dengan persamaan sebagai berikut :

$$Q = \frac{P_u}{A} \pm \frac{M_n}{W}$$

(4.4)

Dengan :

Q = tekanan dasar pada pondasi (kips/$f^{\ 2}$)

P_u = beban struktur (kips)

A = luas area efektif pada pondasi ($f^{\ 2}$)

M_n = momen akibat beban gelombang (kips.ft)

W = modulus tampang pondasi mat

Dari hasil output SACS, sebagaimana pada **Gambar 4.2**, diketahui bahwa Beban Ultimate (P_u) ialah sebesar 2624.803 kips, didapatkan dari reaksi total maksimum vertical (Fz) dan terjadi pada kondisi operasional dengan tinggi gelombang 12 ft.

```
59   1100                    1.0   * GRVT + 1.0   *  LIV + 2.0   *  305

            GRVT      100.00  1.1   *    2 + 1.1   *  105 + 1.1   *  110 + 1.1   *  115 +  +  +  +
             LIV      100.00  1.0   *  260 + 1.0   *  261 + 1.0   *  262 + 1.0   *  265 +  +  +  +
             305      200.00  USER GENERATED LOADS

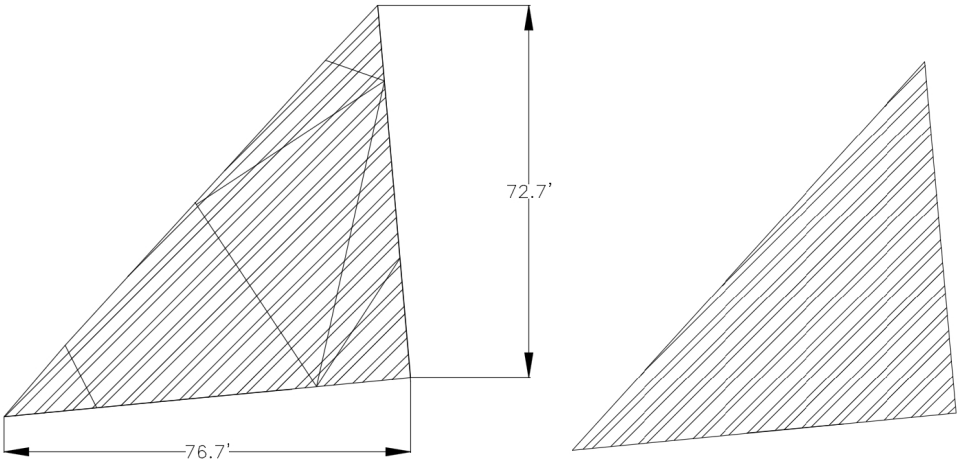
                        FX          FY          FZ          MX          MY          MZ
                      (KIPS)      (KIPS)      (KIPS)    (FT-KIPS)   (FT-KIPS)   (FT-KIPS)

             GRVT       0.000       0.000   -2062.457   -2141.767   -12038.138       0.000
              LIV       0.000       0.000    -540.296    2599.663    -1592.253       0.000
              305       0.000       0.000     -22.050    -286.650     -286.650       0.000

             TOTAL      0.000       0.000   -2624.803     171.246   -13917.041       0.000
```

Gambar 4.6 Besar beban ultimate struktur full mudmat

Untuk mendapatkan besar nilai tekanan pada dasar pondasi (Q), maka parameter yang diperlukan untuk perhitungan selanjutnya ialah luas area pondasi (A), dalam hal ini merupakan luasan ekivalen dari bentuk sesungguhnya *triangle* **(Gambar 4.7a)** ekivalen dengan luasan **(Gambar 4.7b)** dengan rasio Panjang (L) dan lebar (B) yang sama. Lalu, untuk mengetahui momen inersia bidang dapat menggunakan hasil output dari *command massprop* di *autocad* pada **(Gambar 4.8)**. Sedangkan untuk momen akibat gelombang dihasilkan dari output SACS.



(a) (b)

Gambar 4.7 Dimensi pondasi full mudmat sesungguhnya (a) dan luasan penampang ekivalen (b)

```
----------------   REGIONS   ----------------

Area:                      2658.8
Perimeter:                 315.1
Bounding box:           X: -320.2  --  -238.0
                        Y: 157.1  --  240.3
Centroid:               X: -267.6
                        Y: 187.5
Moments of inertia:     X: 110800933.5
                        Y: 224636831.2
Product of inertia:    XY: 156044273.1
Radii of gyration:      X: 188.4
                        Y: 268.3
Principal moments and X-Y directions about centroid:
                        I: 1083089.1 along [0.7 -0.7]
                        J: 427237 along [0.7 0.7]
```

Gambar 4.8 Dimensi ukuran pondasi full mudmat

Dari output perhitungan di autocad pada **Gambar 4.8** didapatkan dimensi-dimensi pondasi 3 mudmat yaitu : dimensi pondasi ekivalen adalah sebesar 76.7 ft (lebar) dan 72.7 ft (panjang), dengan luasan ekivalen sebesar 2658.8 f^{2}. Sedangkan untuk parameter dx dan dy untuk mencari modulus tampang pondasi dari titik centroid bidang sebesar 44.9 ft (dx), 50 ft (dy). Sedangkan untuk momen akibat beban lingkungan yang bekerja diketahui pada **Tabel 4.10.**

Tabel 4.10 Beban lingkungan yang bekerja pada kemiringan 3 Derajat

LOAD CASE			
H=12 ft |T=5.82 s			
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment
		(kips)	(kips.ft)
0 Degree	X Direction	119.23	-25943.4
	Y Direction	-2.04	2183.5
30 Degree	X Direction	103.45	-30478.2
	Y Direction	55.27	-9653.5
60 Degree	X Direction	60.39	-39838.6
	Y Direction	99.02	-18701.6
90 Degree	X Direction	1.03	-127934.4
	Y Direction	116.14	-22130.7
120 Degree	X Direction	-58.17	-62156.3
	Y Direction	100.01	-18676.6
150 Degree	X Direction	-100.33	-71634.7
	Y Direction	56.91	-9736.8
180 Degree	X Direction	-114.14	-74738.7
	Y Direction	-0.68	-954.9
210 Degree	X Direction	-97.54	-70685.4
	Y Direction	-56.78	14020.1
240 Degree	X Direction	-56.32	-61921.7
	Y Direction	-98.06	22507.8
270 Degree	X Direction	0.97	-166544.2
	Y Direction	-114.29	25709.1
300 Degree	X Direction	58.87	-37527.3
	Y Direction	-100.34	22604.8
330 Degree	X Direction	103.20	-28340.7
	Y Direction	-59.22	14025.0

Sehingga diketahui untuk tekanan pada dasar pondasi sebagai berikut :

$$Q = \frac{P_u}{A} \pm \frac{M_x d_y}{I_x} \pm \frac{M_y d_x}{I_y}$$

$$Q_I = \frac{P_u}{A} - \frac{M_x d_y}{I_x} + \frac{M_y d_x}{I_y}$$

$$Q_I = \frac{2624.8}{2658.8} - \frac{-166544.2\ x\ 50}{1083089.1} + \frac{25709.1\ x\ 44.9}{427237}$$

$$Q_I = 11.377\ k \quad /f^{\ 2}$$

Selanjutnya, untuk perhitungan daya dukung ultimate dihitung dengan menggunakan persamaan sebagai berikut (Skempton, 1951) :

$$Q_u = 5S_u\left(1 + \frac{0.2D}{B}\right)\left(1 + \frac{0.2B}{L}\right) \qquad (4.5)$$

Dengan :

Q_u = daya dukung ultimate tanah (kips/$f^{\ 2}$)

S_u = kuat geser tanah rata-rata (kips/$f^{\ 2}$) = 1.14868 kips/$f^{\ 2}$

D = kedalaman pondasi (ft) = 9.84 ft

B = lebar pondasi (ft) = 76.7 ft

L = panjang pondasi (ft) = 72.7 ft

Dari persamaan daya dukung pondasi mat (Skempton), diketahui besar daya dukung ultimate untuk pondasi pada struktur 3 mudmat pada kedalaman 3 m (9.84 ft) yaitu :

$$Q_u = 5S_u\left(1 + \frac{0.2D}{B}\right)\left(1 + \frac{0.2B}{L}\right)$$

$$Q_u = 5\ x\ 1.14868\left(1 + \frac{0.2\ x\ 9.84}{76.7}\right)\left(1 + \frac{0.2\ x\ 76.7}{72.7}\right)$$

$$Q_u = 7.144 \text{ kips/}f^{\ 2}$$

Lalu, untuk mengetahui kemampuan tanah dalam memberikan daya dukung terhadap stuktur, maka dilakukan cek keamanan dengan menggunakan *safety factor*, jika *safety factor* lebih dari 2 (API RP-2A WSD) maka struktur disebut aman dari keruntuhan terhadap daya dukungnya.

$S = \frac{Q_u}{Q_I}$, jika SF>2 maka struktur aman (API RP-2A WSD) (4.6)

Dengan :

Q_u = daya dukung ultimate tanah

Q_I = besar tekanan pada pondasi

$$S = \frac{7.144}{11.377} = 0.628$$

Sehingga safety factor total ialah :

$$S = S\ \ f\ \ \ m\ \ \ \ \ + S\ \ p$$

$$S = 0.627 + 12.705$$

$$S = \mathbf{1}\ .\mathbf{3}$$

Perhitungan saat kondisi operasi arah gelombang datang 270 derajat dengan kemiringan 3 derajat dan ketinggian gelombang 12 ft, dengan SF sebesar **13.333** $>$ 2 **(Tabel 4.11).**

Tabel 4.11 Hasil perhitungan struktur full mudmat 12 arah gelombang 3 derajat kemiringan

LOAD CASE				Full Mudmat Pressure 3 Degree						
H=12 ft |T=5.82 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	119.23	-25943.4	0.019	-0.440	2.414	1.955	2.414	7.144	15.664
	Y Direction	-2.04	2183.5							
30 Degree	X Direction	103.45	-30478.2	-1.434	0.595	1.380	3.409	3.409	7.144	14.801
	Y Direction	55.27	-9653.5							
60 Degree	X Direction	60.39	-39838.6	-2.817	1.114	0.861	4.792	4.792	7.144	14.196
	Y Direction	99.02	-18701.6							
90 Degree	X Direction	1.03	-127934.4	-7.245	-2.593	4.567	9.219	9.219	7.144	13.480
	Y Direction	116.14	-22130.7							
120 Degree	X Direction	-58.17	-62156.3	-3.845	0.081	1.894	5.819	5.819	7.144	13.933
	Y Direction	100.01	-18676.6							
150 Degree	X Direction	-100.33	-71634.7	-3.343	-1.296	3.271	5.317	5.317	7.144	14.048
	Y Direction	56.91	-9736.8							
180 Degree	X Direction	-114.14	-74738.7	-2.563	-2.363	4.337	4.538	4.538	7.144	14.279
	Y Direction	-0.68	-954.9							
210 Degree	X Direction	-97.54	-70685.4	-0.802	-3.749	5.724	2.777	5.724	7.144	13.953
	Y Direction	-56.78	14020.1							
240 Degree	X Direction	-56.32	-61921.7	0.494	-4.237	6.211	1.480	6.211	7.144	13.855
	Y Direction	-98.06	22507.8							
270 Degree	X Direction	0.97	-166544.2	-3.999	-9.403	11.377	5.974	11.377	7.144	13.333
	Y Direction	-114.29	25709.1							
300 Degree	X Direction	58.87	-37527.3	1.630	-3.121	5.095	0.344	5.095	7.144	14.107
	Y Direction	-100.34	22604.8							
330 Degree	X Direction	103.20	-28340.7	1.153	-1.795	3.769	0.822	3.769	7.144	14.600
	Y Direction	-59.22	14025.0							

4.7 Analisa Sliding Stability Tanpa Mudmat

Analisa sliding stability menghasilkan besar nilai kemampuan pondasi terhadap beban-beban lateral yang bekerja mengenai struktur. sliding resistance diperhitungkan untuk mengetahui besar tahanan terhadap beban lateral yang bekerja. Dari hasil analisa statis sacs diperoleh besar base shear caisson dan 2 battered pile pada **Gambar 4.9** sebesar :

* * P I L E G R O U P S U M M A R Y * *

GROUP ID = CAS

DISTANCE FROM PILEHEAD FT	***** DEFLECTIONS ***** LATERAL IN	AXIAL IN	ROT. RAD	***** INTERNAL LOADS ***** BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMB. STRESS KSI	PILE HEAD ID	CRITICAL LOAD CASE	MAXIMUM UNITY CHECK
0.0	0.523	0.532	0.00243	16263.1	43.3	-2409.8	3.68	-7.10	0.26	-10.78	101	2012	0.335

* * P I L E G R O U P S U M M A R Y * *

GROUP ID = PL1

DISTANCE FROM PILEHEAD FT	***** DEFLECTIONS ***** LATERAL IN	AXIAL IN	ROT. RAD	***** INTERNAL LOADS ***** BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMB. STRESS KSI	PILE HEAD ID	CRITICAL LOAD CASE	MAXIMUM UNITY CHECK
0.0	0.264	-0.015	0.00173	3416.9	7.1	90.2	2.54	0.56	0.09	3.09	102	2011	0.086

** P I L E G R O U P S U M M A R Y **

GROUP ID = PL2

DISTANCE FROM PILEHEAD FT	***** DEFLECTIONS ***** LATERAL IN	AXIAL IN	ROT. RAD	***** INTERNAL LOADS ***** BENDING MOMENT IN-KIP	SHEAR KIPS	AXIAL LOAD KIPS	********** STRESSES ********** BENDING STRESS KSI	AXIAL STRESS KSI	SHEAR STRESS KSI	COMB. STRESS KSI	PILE HEAD ID	CRITICAL LOAD CASE	MAXIMUM UNITY CHECK
0.0	0.443	0.131	0.00274	4703.8	14.9	-393.7	3.49	-2.42	0.18	-5.92	103	2008	0.174

Gambar 4.9 Hasil base shear SACS

Caisson pile : 43.3 kips

Pile 1 : 7.1 kips

Pile 2 : 14.9 kips

Lalu, untuk menghitung sliding resistance total sebesar :

H total = Base shear caisson pile + base shear pile 1 + base shear pile 2

H total = 43.3 + 7.1 + 14.9

H total = 65.3 kips

Sedangkan untuk gaya lateral yang bekerja merupakan jumlah dari akar persamaan kuadrat gaya-gaya yang bekerja searah sumbu x dan y dari output SACS.

$$H_E = \sqrt[2]{F_x{}^2 + F_y{}^2}$$

Sedangkan untuk nilai faktor *sliding resistance* minimum yang direkomendasikan oleh API RP2A WSD yaitu 1.5 :

$$\frac{H}{H_E} \geq 1.5 \qquad (4.8)$$

Dengan :

H = tahanan geser tanah (kips)

H_E = gaya lateral yang bekerja pada dasar pondasi (kips)

Tabel 4.12 Besar safety factor tanpa mudmat terhadap 12 arah gelombang datang

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat Sliding Analysis 3 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Total Lateral Force (kips)	Sliding Resistance (kips)	Factor of Safety	Min SF
0 Degree	X Direction	118.65	118.67	65.30	0.55	1.5
	Y Direction	-1.94				
30 Degree	X Direction	103.04	116.88	65.30	0.56	1.5
	Y Direction	55.18				
60 Degree	X Direction	60.23	115.69	65.30	0.56	1.5
	Y Direction	98.78				
90 Degree	X Direction	1.13	115.79	65.30	0.56	1.5
	Y Direction	115.78				
120 Degree	X Direction	-57.81	115.15	65.30	0.57	1.5
	Y Direction	99.59				
150 Degree	X Direction	-99.75	114.69	65.30	0.57	1.5
	Y Direction	56.6				
180 Degree	X Direction	-113.55	113.55	65.30	0.58	1.5
	Y Direction	-0.78				
210 Degree	X Direction	-97.14	112.47	65.30	0.58	1.5
	Y Direction	-56.68				
240 Degree	X Direction	-56.16	112.79	65.30	0.58	1.5
	Y Direction	-97.82				
270 Degree	X Direction	0.87	113.93	65.30	0.57	1.5
	Y Direction	-113.93				
300 Degree	X Direction	58.52	115.80	65.30	0.56	1.5
	Y Direction	-99.93				
330 Degree	X Direction	102.65	118.36	65.30	0.55	1.5
	Y Direction	-58.92				

4.8 Analisa Sliding Stability 3 Mudmat

Analisa sliding stability menghasilkan besar nilai kemampuan pondasi terhadap beban-beban lateral yang bekerja mengenai struktur. sliding resistance diperhitungkan untuk mengetahui besar tahanan terhadap beban lateral yang bekerja. Sliding resistance untuk tanah diperhitungkan sesuai API RP 2A WSD yaitu :

$$H = c_u . A \tag{4.7}$$

Dengan :

H = tahanan geser tanah (kips)

c_u = gaya geser pada level dasar (mudline) (k $/f^2$) = 0.08354

k $/f^2$

A = luas pondasi 3 mudmat (f^2) = 2090 f^2

H_E = gaya lateral yang bekerja pada dasar pondasi (kips)

Sehingga diketahui besar tahanan geser tanah :

$H = c_u . A + H p$

$H = 0.08354\ x\ 2090 + 65.3$

$H =$ 239.9 kips

Sedangkan untuk gaya lateral yang bekerja merupakan jumlah dari akar persamaan kuadrat gaya-gaya yang bekerja searah sumbu x dan y dari output SACS.

$$H_E = \sqrt[2]{F_x{}^2 + F_y{}^2} \tag{4.8}$$

Tabel 4.13 Gaya lateral yang bekerja dari output SACS 3 Mudmat

LOAD CASE			
H=12 ft |T=5.82 s			
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force
		(kips)	(kips)
0 Degree	X Direction	119.12	119.14
	Y Direction	-2.05	
30 Degree	X Direction	103.34	117.18
	Y Direction	55.25	
60 Degree	X Direction	60.33	115.96
	Y Direction	99.03	
90 Degree	X Direction	1.01	116.18
	Y Direction	116.18	
120 Degree	X Direction	-58.14	115.71
	Y Direction	100.04	
150 Degree	X Direction	-100.25	115.28
	Y Direction	56.92	
180 Degree	X Direction	-114.03	114.03
	Y Direction	-0.67	
210 Degree	X Direction	-97.44	112.77
	Y Direction	-56.76	
240 Degree	X Direction	-56.26	113.06
	Y Direction	-98.07	
270 Degree	X Direction	0.99	114.33
	Y Direction	-114.33	
300 Degree	X Direction	58.84	116.35
	Y Direction	-100.37	
330 Degree	X Direction	103.12	118.92
	Y Direction	-59.23	

Sedangkan untuk nilai faktor *sliding resistance* minimum yang direkomendasikan oleh API RP2A WSD yaitu 1.5 :

$$\frac{H}{H_E} \geq 1.5 \tag{4.9}$$

Dengan :

H = tahanan geser tanah (kips)

H_E = gaya lateral yang bekerja pada dasar pondasi (kips)

Tabel 4.14 Besar safety factor 3 mudmat terhadap 12 arah gelombang datang

LOAD CASE				3 Mudmat Sliding Analysis 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	119.12	119.14	239.90	2.01	1.5
	Y Direction	-2.05				
30 Degree	X Direction	103.34	117.18	239.90	2.05	1.5
	Y Direction	55.25				
60 Degree	X Direction	60.33	115.96	239.90	2.07	1.5
	Y Direction	99.03				
90 Degree	X Direction	1.01	116.18	239.90	2.06	1.5
	Y Direction	116.18				
120 Degree	X Direction	-58.14	115.71	239.90	2.07	1.5
	Y Direction	100.04				
150 Degree	X Direction	-100.25	115.28	239.90	2.08	1.5
	Y Direction	56.92				
180 Degree	X Direction	-114.03	114.03	239.90	2.10	1.5
	Y Direction	-0.67				
210 Degree	X Direction	-97.44	112.77	239.90	2.13	1.5
	Y Direction	-56.76				
240 Degree	X Direction	-56.26	113.06	239.90	2.12	1.5
	Y Direction	-98.07				
270 Degree	X Direction	0.99	114.33	239.90	2.10	1.5
	Y Direction	-114.33				
300 Degree	X Direction	58.84	116.35	239.90	2.06	1.5
	Y Direction	-100.37				
330 Degree	X Direction	103.12	118.92	239.90	2.02	1.5
	Y Direction	-59.23				

Dari **Tabel 4.13** dapat diketahui safety factor aitu 2.10 dari arah gelombang datang 210 Derajat. Analisa dilakukan dengan kemiringan struktur sebesar 3 derajat dan ketinggian gelombang 12 ft.

4.9 Analisa Sliding Stability Full Mudmat

Analisa sliding stability menghasilkan besar nilai kemampuan pondasi terhadap beban-beban lateral yang bekerja mengenai struktur. sliding resistance diperhitungkan untuk mengetahui besar tahanan terhadap beban lateral yang bekerja. Sliding resistance untuk tanah diperhitungkan sesuai API RP 2A WSD yaitu :

$$H = c_u \, . A \tag{4.10}$$

Dengan :

H = tahanan geser tanah (kips)

c_u = gaya geser pada level dasar (mudline) ($k \quad /f^{\,2}$) = 0.08354 $k \quad /f^{\,2}$

A = luas pondasi Full mudmat ($f^{\,2}$) = 2658.8 $f^{\,2}$

H_E = gaya lateral yang bekerja pada dasar pondasi (kips)

Sehingga diketahui besar tahanan geser tanah :

$$H = c_u \, . A + H \, p$$

$$H = 0.08354 \; x \; 2658.8 + 65.3$$

$$H = 287.42 \text{ kips}$$

Sedangkan untuk gaya lateral yang bekerja merupakan jumlah dari akar persamaan kuadrat gaya-gaya yang bekerja searah sumbu x dan y dari output SACS.

$$H_E = \sqrt[2]{F_x{}^2 + F_y{}^2} \tag{4.11}$$

Tabel 4.15 Gaya lateral yang bekerja dari output SACS Full Mudmat

LOAD CASE			
H=12 ft |T=5.82 s			
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force
		(kips)	(kips)
0 Degree	X Direction	119.23	119.25
	Y Direction	-2.04	
30 Degree	X Direction	103.45	117.29
	Y Direction	55.27	
60 Degree	X Direction	60.39	115.98
	Y Direction	99.02	
90 Degree	X Direction	1.03	116.14
	Y Direction	116.14	
120 Degree	X Direction	-58.17	115.70
	Y Direction	100.01	
150 Degree	X Direction	-100.33	115.35
	Y Direction	56.91	
180 Degree	X Direction	-114.14	114.14
	Y Direction	-0.68	
210 Degree	X Direction	-97.54	112.86
	Y Direction	-56.78	
240 Degree	X Direction	-56.32	113.08
	Y Direction	-98.06	
270 Degree	X Direction	0.97	114.29
	Y Direction	-114.29	
300 Degree	X Direction	58.87	116.33
	Y Direction	-100.34	
330 Degree	X Direction	103.20	118.98
	Y Direction	-59.22	

Sedangkan untuk nilai faktor *sliding resistance* minimum yang direkomendasikan oleh API RP2A WSD yaitu 1.5 :

$$\frac{H}{H_E} \geq 1.5 \tag{4.12}$$

Dengan :

H = tahanan geser tanah (kips)

H_E = gaya lateral yang bekerja pada dasar pondasi (kips)

Tabel 4.16 Besar safety factor full mudmat terhadap 12 arah gelombang datang

LOAD CASE				Full Mudmat Sliding Analysis 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	119.23	119.25	287.42	2.41	1.5
	Y Direction	-2.04				
30 Degree	X Direction	103.45	117.29	287.42	2.45	1.5
	Y Direction	55.27				
60 Degree	X Direction	60.39	115.98	287.42	2.48	1.5
	Y Direction	99.02				
90 Degree	X Direction	1.03	116.14	287.42	2.47	1.5
	Y Direction	116.14				
120 Degree	X Direction	-58.17	115.70	287.42	2.48	1.5
	Y Direction	100.01				
150 Degree	X Direction	-100.33	115.35	287.42	2.49	1.5
	Y Direction	56.91				
180 Degree	X Direction	-114.14	114.14	287.42	2.52	1.5
	Y Direction	-0.68				
210 Degree	X Direction	-97.54	112.86	287.42	2.55	1.5
	Y Direction	-56.78				
240 Degree	X Direction	-56.32	113.08	287.42	2.54	1.5
	Y Direction	-98.06				
270 Degree	X Direction	0.97	114.29	287.42	2.51	1.5
	Y Direction	-114.29				
300 Degree	X Direction	58.87	116.33	287.42	2.47	1.5
	Y Direction	-100.34				
330 Degree	X Direction	103.20	118.98	287.42	2.42	1.5
	Y Direction	-59.22				

Dari **Tabel 4.16** dapat diketahui safety factor yaitu 2.51 dari arah gelombang datang 210 Derajat. Analisa dilakukan dengan kemiringan struktur sebesar 3 derajat dan ketinggian gelombang 12 ft.

4.10 Analisa Overturning Stability Tanpa Mudmat

Analisa overturning stability dilakukan untuk mengetahui besar stabilitas struktur terhadap beban lateral yang bekerja. Parameter dalam analisis ini ialah besarnya momen pengembali yang dimiliki pile pada struktur jacket. Beban lateral yang ditransfer akan diterima oleh pile dalam bentuk momen, sedangkan dalam analisa overturning stability perlu diperhitungkan momen pengembali yang dimiliki pile.

Besarnya momen guling ditentukan dari beban lingkungan (gelombang, arus dan angin), konstruksi struktur jacket terutama diameter leg, serta letak titik overturningnya. Sedangkan besarnya momen pengembali oleh pile akan bergantung pada axial capacity pile dan jarak antar pondasi pile.

Perhitungan momen guling didapatkan dari output SACS pada struktur tanpa pondasi mudmat sebesar -149374.65 kips.ft arah gelombang 270 derajat kemiringan 3 derajat dengan ketinggian gelombang 12 ft.

$M_O = -149374.65\ k \quad .f$

Untuk Pile 1

$M_p = P\ .a$

$M_p = 4155.7\ x\ 55.355$

$M_p = 230{,}038.773\ k \quad .f$

Untuk Pile 2

$M_p = P\ .a$

$M_p = 4155.7\ x\ 54.374$

$M_p = 225{,}962.031\ k \quad .f$

Untuk Caisson Pile dengan kemiringan 3 Derajat

$M_p = (P\ .a) - M \qquad P\ D$

$M_p = (10034.3\ x\ 55.355) - 26820.409$

$M_p = 555{,}448.676 - 26820.409$

$M_p = 528{,}628.267k \quad .f$

Sehingga dapat diketahui safety factor dalam setiap arah gelombang datang pada **Tabel 4.17**

Tabel 4.17 Overturning safety factor tanpa mudmat

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat 3 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	118.65	-25817.1	528628.268	20.48	20.48
	Y Direction	-1.94	2076.5	104514.551	50.33	
30 Degree	X Direction	103.04	-30357.4	545605.028	17.97	17.97
	Y Direction	55.18	-9637.8	225962.032	23.45	
60 Degree	X Direction	60.23	-39733.1	518784.619	13.06	12.11
	Y Direction	98.78	-18656.3	225962.032	12.11	
90 Degree	X Direction	1.13	-140355.2	528628.268	3.77	3.77
	Y Direction	115.78	-22062.1	225962.032	10.24	
120 Degree	X Direction	-57.81	-61771.7	230038.774	3.72	3.72
	Y Direction	99.59	-18598.2	225962.032	12.15	
150 Degree	X Direction	-99.75	-71220.5	230038.774	3.23	3.23
	Y Direction	56.6	-9683.8	225962.032	23.33	
180 Degree	X Direction	-113.55	-74352.4	230038.774	3.09	3.09
	Y Direction	-0.78	-1095.3	230038.774	210.02	
210 Degree	X Direction	-97.14	-70395.6	230038.774	3.27	3.27
	Y Direction	-56.68	13995.5	104514.551	7.47	
240 Degree	X Direction	-56.16	-61745.8	230038.774	3.73	3.73
	Y Direction	-97.82	22452.8	104514.551	4.65	
270 Degree	X Direction	0.87	-149374.7	230038.774	1.54	1.54
	Y Direction	-113.93	25628.1	104514.551	4.08	
300 Degree	X Direction	58.52	-37304.2	528628.268	14.17	4.64
	Y Direction	-99.93	22512.5	104514.551	4.64	
330 Degree	X Direction	102.65	-28189.7	528628.268	18.75	7.49
	Y Direction	-58.92	13954.0	104514.551	7.49	

Perbandingan ratio antara momen pengembali dengan momen guling yang direkomendasikan API RP-2A WSD tidak boleh kurang dari 2.0

$$\frac{M_p}{M_O} \geq 2.0$$

Diperoleh dari hasil analisa overturning tanpa pondasi mudmat safety factor minimal sebesar **1.54** arah gelombang 270 derajat, analisa dilakukan dengan 3 derajat kemiringan dan ketinggian gelombang 12 ft.

4.11 Analisa Overturning Stability 3 Mudmat

Analisa overturning stability dilakukan untuk mengetahui besar stabilitas struktur terhadap beban lateral yang bekerja. Parameter dalam analisis ini ialah besarnya momen pengembali yang dimiliki pile pada struktur jacket. Beban lateral yang ditransfer akan diterima oleh pile dalam bentuk momen, sedangkan dalam analisa overturning stability perlu diperhitungkan momen pengembali yang dimiliki pile.

Besarnya momen guling ditentukan dari beban lingkungan (gelombang, arus dan angin), konstruksi struktur jacket terutama diameter leg, serta letak titik

overturningnya. Sedangkan besarnya momen pengembali oleh pile akan bergantung pada axial capacity pile dan jarak antar pondasi pile.

Perhitungan momen guling didapatkan dari output SACS pada struktur dengan pondasi 3 mudmat sebesar -169978.05kips.ft arah gelombang 270 derajat kemiringan 3 derajat dengan ketinggian gelombang 12 ft.

$$M_O = -169978.05k \quad .f$$

Sedangkan besar momen pengembali dihitung dengan mengalikan bearing capacity pile (P) dengan lengan pengembalinya (a), sehingga didapatkan momen pengembalinya (M_p) sebesar :

Untuk Pile 1

$$M_p = P \,.\, a + K \qquad p \quad 1$$

$$M_p = 405.6 \; x \; 64.5 + 230{,}038.773$$

$$M_p = 280{,}832.949 \; k \quad .f$$

Untuk Pile 2

$$M_p = P \,.\, a + K \qquad p \quad 2$$

$$M_p = 145.4 \; x \; 61.3 + 225{,}962.031$$

$$M_p = 259{,}071.482 \; k \quad .f$$

Untuk Caisson Pile dengan kemiringan 3 Derajat

$$M_p = [(P \,.\, a) + K \qquad C \qquad p \quad] - M \;\; me \;\; P \; D$$

$$M_p = [(2420.4 \; x \; 64.5) + 555{,}448.676] - 27156.174$$

$$M_p = 156115.8 + 555{,}448.676 \; - 27156.174$$

$$M_p = 684{,}408.303k \quad .f$$

Sehingga dapat diketahui safety factor dalam setiap arah gelombang datang pada **Tabel 4.18**

Tabel 4.18 Overturning safety factor 3 mudmat

LOAD CASE				3 Mudmat 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	119.12	-25919.4	684408.303	26.41	26.41
	Y Direction	-2.05	2194.2	252549.306	115.10	
30 Degree	X Direction	103.34	-30445.8	693975.548	22.79	22.79
	Y Direction	55.25	-9650.0	259071.482	26.85	
60 Degree	X Direction	60.33	-39799.0	666819.374	16.75	13.85
	Y Direction	99.03	-18703.5	259071.482	13.85	
90 Degree	X Direction	1.01	-125450.3	684408.303	5.46	5.46
	Y Direction	116.18	-22138.3	259071.482	11.70	
120 Degree	X Direction	-58.14	-62124.3	280832.949	4.52	4.52
	Y Direction	100.04	-18682.2	259071.482	13.87	
150 Degree	X Direction	-100.25	-71577.5	280832.949	3.92	3.92
	Y Direction	56.92	-9738.5	259071.482	26.60	
180 Degree	X Direction	-114.03	-74666.7	280832.949	3.76	3.76
	Y Direction	-0.67	-940.9	280832.949	298.48	
210 Degree	X Direction	-97.44	-70613.0	280832.949	3.98	3.98
	Y Direction	-56.76	14015.2	252549.306	18.02	
240 Degree	X Direction	-56.26	-61855.8	280832.949	4.54	4.54
	Y Direction	-98.07	22510.1	252549.306	11.22	
270 Degree	X Direction	0.99	-169978.1	330832.949	1.95	1.95
	Y Direction	-114.33	25718.1	252549.306	9.82	
300 Degree	X Direction	58.84	-37508.1	684408.303	18.25	11.17
	Y Direction	-100.37	22611.6	252549.306	11.17	
330 Degree	X Direction	103.12	-28318.7	684408.303	24.17	18.00
	Y Direction	-59.23	14027.4	252549.306	18.00	

Perbandingan ratio antara momen pengembali dengan momen guling yang direkomendasikan API RP-2A WSD tidak boleh kurang dari 2.0

$$\frac{M_p}{M_O} \geq 2.0$$

Diperoleh dari hasil analisa overturning tanpa pondasi mudmat safety factor minimal sebesar 1.95 arah gelombang 270 derajat, analisa dilakukan dengan 3 derajat kemiringan dan ketinggian gelombang 12 ft.

4.12 Analisa Overturning Stability Full Mudmat

Analisa overturning stability dilakukan untuk mengetahui besar stabilitas struktur terhadap beban lateral yang bekerja. Parameter dalam analisis ini ialah besarnya momen pengembali yang dimiliki pile pada struktur jacket. Beban lateral yang ditransfer akan diterima oleh pile dalam bentuk momen, sedangkan dalam analisa overturning stability perlu diperhitungkan momen pengembali yang dimiliki pile.

Besarnya momen guling ditentukan dari beban lingkungan (gelombang, arus dan angin), konstruksi struktur jacket terutama diameter leg, serta letak titik overturningnya. Sedangkan besarnya momen pengembali oleh pile akan bergantung pada axial capacity pile dan jarak antar pondasi pile.

Perhitungan momen guling didapatkan dari output SACS pada struktur dengan pondasi full mudmat sebesar -166544.15 kips.ft arah gelombang 270 derajat kemiringan 3 derajat dengan ketinggian gelombang 12 ft.

$M_O = -166544.15\ k \quad .f$

Sedangkan besar momen pengembali dihitung dengan mengalikan bearing capacity pile (P) dengan lengan pengembalinya (a), sehingga didapatkan momen pengembalinya (M_p) sebesar :

Untuk Pile 1

$M_p = P\ .a + k \qquad p \quad 1$

$M_p = 410.6\ x\ 76.7 + 230{,}038.773$

$M_p = 261{,}531.793\ k \quad .f$

Untuk Pile 2

$M_p = P\ .a + k \qquad p \quad 2$

$M_p = 160.4\ x\ 72.7 + 225{,}962.031$

$M_p = 237{,}623.111\ k \quad .f$

Untuk Caisson Pile dengan kemiringan 3 Derajat

$M_p = [(P\ .a) + k \qquad c \qquad p \quad] - M \qquad P\ D$

$M_p = [(2432.4\ x\ 76.7) + 555{,}448.676] - 27345.376$

$M_p = 186565.08 + 555{,}448.676 - 27345.376$

$M_p = 714668.38\ k \quad .f$

Sehingga dapat diketahui safety factor dalam setiap arah gelombang datang pada **Tabel 4.19**

Tabel 4.19 Overturning safety factor full mudmat

LOAD CASE				Full Mudmat 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	119.23	-25943.4	714668.381	27.55	27.55
	Y Direction	-2.04	2183.5	280825.064	128.61	
30 Degree	X Direction	103.45	-30478.2	722440.508	23.70	23.70
	Y Direction	55.27	-9653.5	261819.542	27.12	
60 Degree	X Direction	60.39	-39838.6	695095.132	17.45	14.00
	Y Direction	99.02	-18701.6	261819.542	14.00	
90 Degree	X Direction	1.03	-127934.4	714668.381	5.59	5.59
	Y Direction	116.14	-22130.7	261819.542	11.83	
120 Degree	X Direction	-58.17	-62156.3	286164.769	4.60	4.60
	Y Direction	100.01	-18676.6	261819.542	14.02	
150 Degree	X Direction	-100.33	-71634.7	286164.769	3.99	3.99
	Y Direction	56.91	-9736.8	261819.542	26.89	
180 Degree	X Direction	-114.14	-74738.7	286164.769	3.83	3.83
	Y Direction	-0.68	-954.9	286164.769	299.68	
210 Degree	X Direction	-97.54	-70685.4	286164.769	4.05	4.05
	Y Direction	-56.78	14020.1	280825.064	20.03	
240 Degree	X Direction	-56.32	-61921.7	286164.769	4.62	4.62
	Y Direction	-98.06	22507.8	280825.064	12.48	
270 Degree	X Direction	0.97	-166544.2	336164.769	2.02	2.02
	Y Direction	-114.29	25709.1	280825.064	10.92	
300 Degree	X Direction	58.87	-37527.3	714668.381	19.04	12.42
	Y Direction	-100.34	22604.8	280825.064	12.42	
330 Degree	X Direction	103.20	-28340.7	714668.381	25.22	20.02
	Y Direction	-59.22	14025.0	280825.064	20.02	

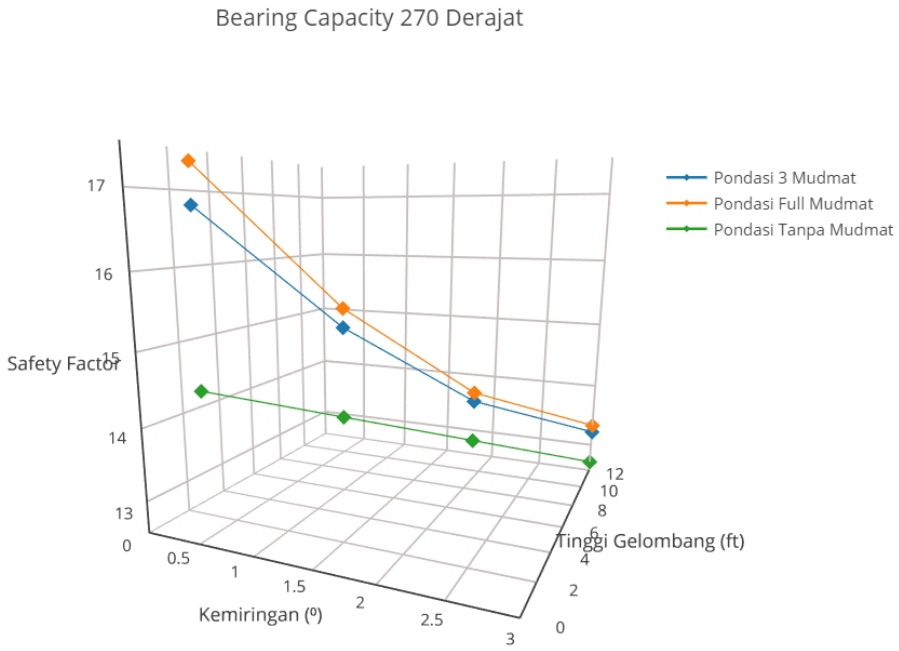
Perbandingan ratio antara momen pengembali dengan momen guling yang direkomendasikan API RP-2A WSD tidak boleh kurang dari 2.0

$$\frac{M_p}{M_O} \geq 2.0$$

Diperoleh dari hasil analisa overturning tanpa pondasi mudmat safety factor minimal sebesar 2.02 arah gelombang 270 derajat, analisa dilakukan dengan 3 derajat kemiringan dan ketinggian gelombang 12 ft.

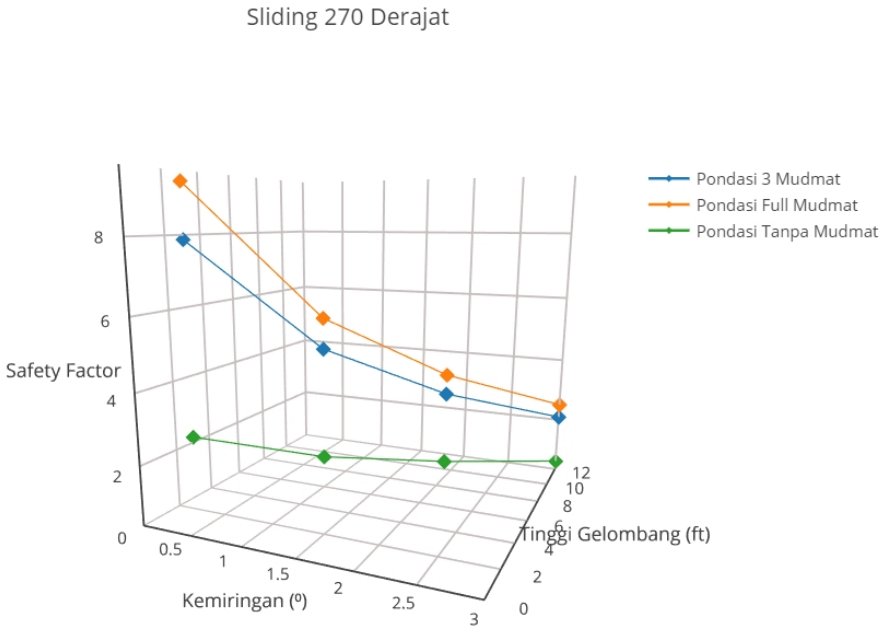
4.13 Grafik Performance Analisa On Bottom Stability

Dari hasil analisa *bearing capacity* arah gelombang datang 270 derajat didapatkan bahwa grafik struktur dengan pondasi tanpa mudmat , 3 mudmat dan full mudmat memiliki persamaan non-linear seiring dengan terjadinya kemiringan struktur. Didapatkan *safety factor* struktur pondasi 3 dan full mudmat lebih dari yang direkomendasikan API RP2A WSD sedangkan struktur tanpa pondasi mudmat di bawah 2.0. Persamaan grafik tersebut dapat dilihat pada **Gambar 4.10**.



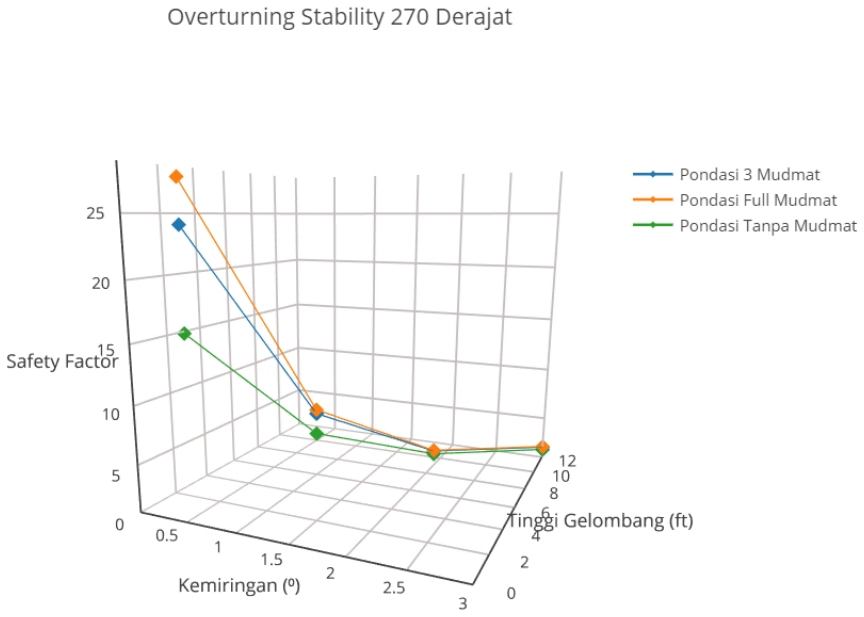
Gambar 4.10 Grafik Bearing Capacity 270 Derajat

Dari hasil analisa *sliding stability* arah gelombang datang 270 derajat didapatkan bahwa grafik struktur dengan pondasi tanpa mudmat , struktur dengan pondasi 3 dan full mudmat memiliki persamaan non-linear seiring dengan terjadinya kemiringan struktur. Didapatkan struktur dengan pondasi tanpa mudmat mengalami *failure* pada analisa *sliding* dengan kemiringan 3 derajat. Persamaan grafik tersebut dapat dilihat pada **Gambar 4.11**.



Gambar 4.11 Grafik Sliding 270 Derajat

Dari hasil analisa *overturning stability* arah gelombang datang 270 derajat didapatkan bahwa grafik struktur dengan pondasi tanpa mudmat memiliki persamaan non-linear, struktur dengan pondasi 3 dan full mudmat memiliki persamaan non-linear seiring dengan terjadinya kemiringan struktur. Didapatkan struktur dengan pondasi tanpa mudmat dan 3 mudmat mengalami *failure* pada analisa *overturning* dengan kemiringan 3 derajat. Persamaan grafik tersebut dapat dilihat pada **Gambar 4.12**.



Gambar 4.12 Grafik Overturning 270 Derajat

BAB V

KESIMPULAN DAN SARAN

5.1. Kesimpulan

Berdasarkan hasil analisis kriteria *on bottom stability* pada tugas akhir ini, maka diperoleh kesimpulan sebagai berikut :

1. Untuk hasil analisa *bearing capacity* untuk setiap struktur telah memenuhi *safety factor* yang direkomendasikan API RP-2A WSD lebih dari 2.0 dengan kondisi platform saat operasi ketinggian gelombang 12 ft kemiringan platform 3 derajat. Sebagaimana struktur tanpa pondasi mudmat memiliki *safety factor* sebesar 12.705, sedangkan struktur dengan pondasi 3 mudmat dengan *safety factor* sebesar 13.223, dan struktur dengan pondasi full mudmat dengan *safety factor* sebesar 13.333
2. Untuk hasil analisa *overturning stability* didapatkan nilai *safety factor* untuk setiap struktur yang direkomendasikan oleh API RP-2A WSD lebih dari 2.0. Struktur tanpa pondasi mudmat mengalami *failure* dengan *safety factor* sebesar 1.54, struktur dengan 3 mudmat mengalami *failure* dengan *safety factor* sebesar 1.95, sedangkan struktur dengan pondasi full mudmat memenuhi kriteria kriteria yang direkomendasikan API RP-2A WSD dengan *safety factor* sebesar 2.02.
3. Untuk hasil analisa *sliding* didapatkan nilai *safety factor* untuk setiap struktur yang direkomendasikan API RP-2A WSD lebih dari 1.5. Struktur tanpa pondasi mudmat dengan kondisi platform saat operasi ketinggian gelombang 12 ft kemiringan platform 3 derajat mengalami *failure* dikarenakan oleh *safety factor* sebesar 0.57, struktur dengan pondasi 3 dan full mudmat memenuhi kriteria yang direkomendasikan API RP-2A WSD dengan *safety factor* sebesar 2.10 dan 2.51.

5.2. Saran

Dari hasil yang telah dicapai penulis, untuk penelitian tugas akhir selanjutnya maka selanjutnya dapat dilakukan analisa dengan mempertimbangkan :

1. Variasi Skirt Pile pada Struktur
2. Variasi Buoyancy Tank pada Jacket

3. Pengaruh kerusakan tanah pada parameter data pondasi
4. Pengaruh *negative effect from soil* terhadap pondasi

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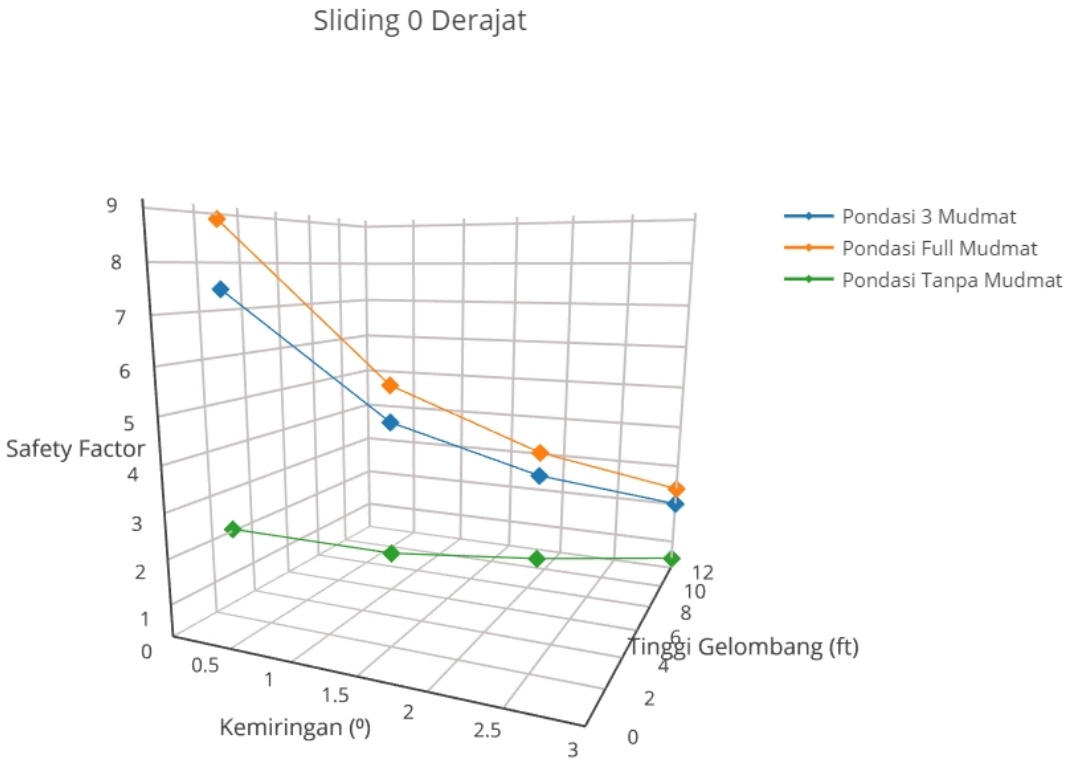
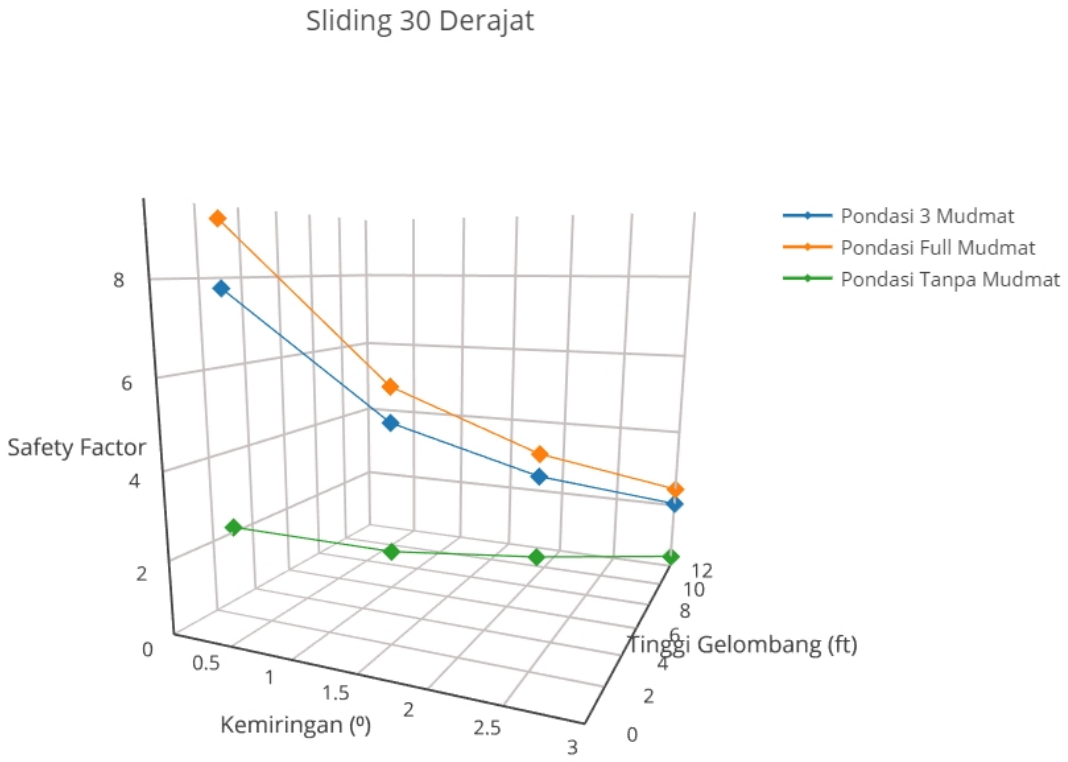
LAMPIRAN - LAMPIRAN

Lampiran

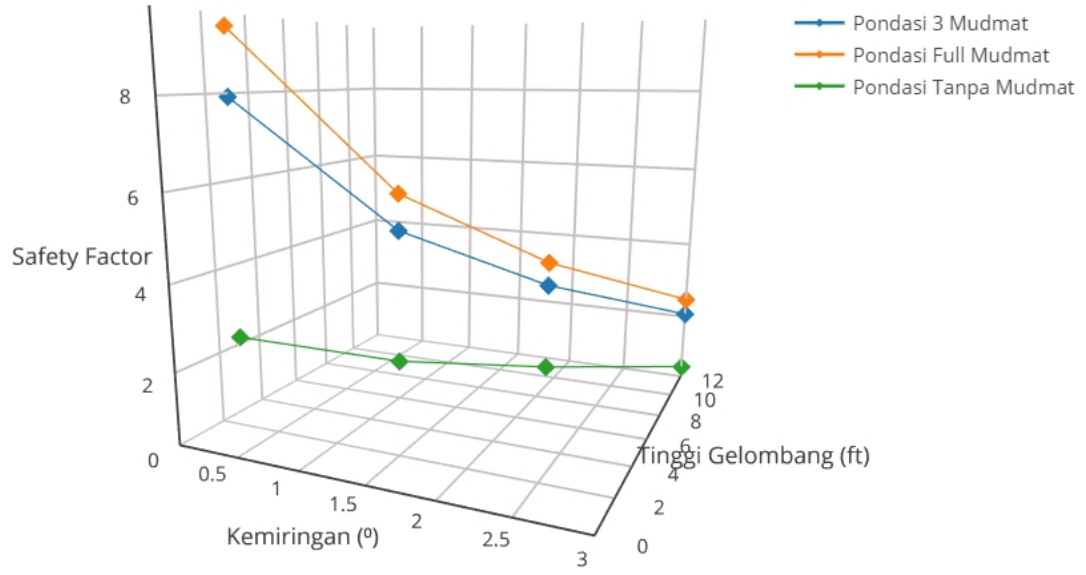
Grafik Performance Analisa Sliding Stability 12 Arah Gelombang

Grafik Sliding Stability

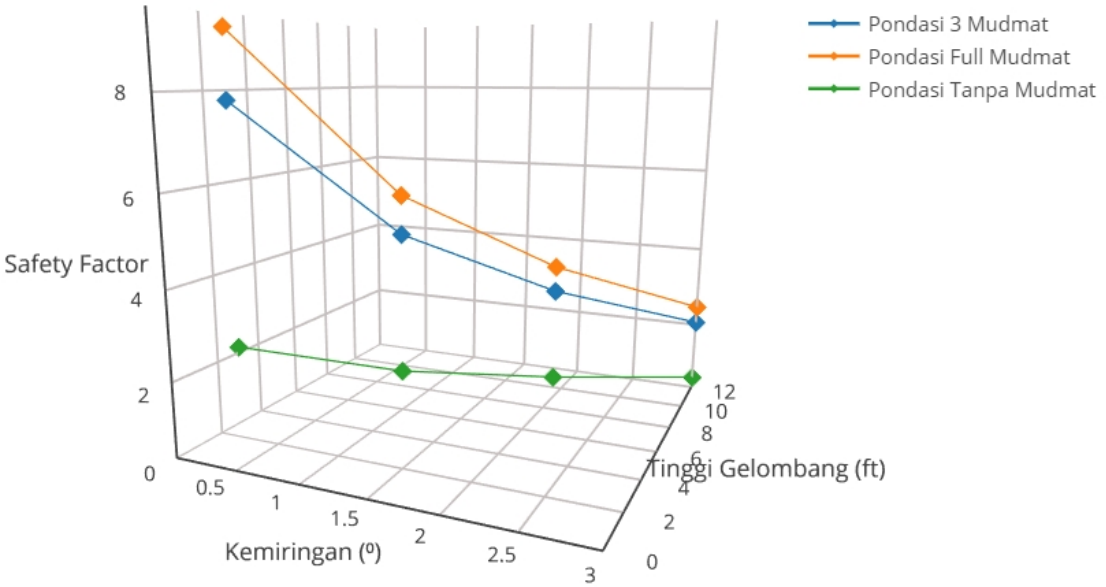




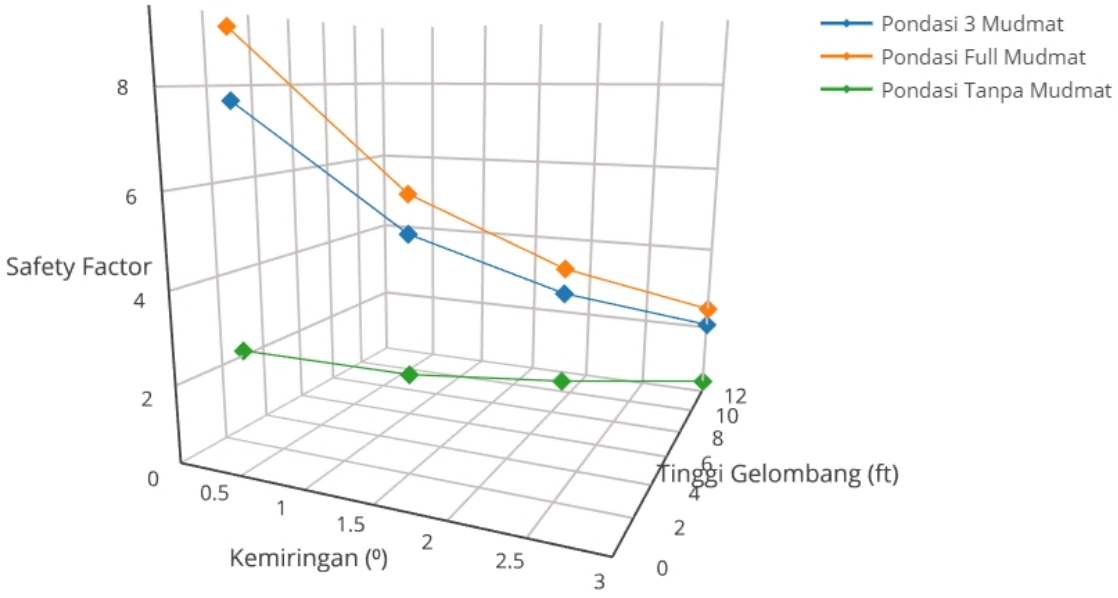
Sliding 60 Derajat



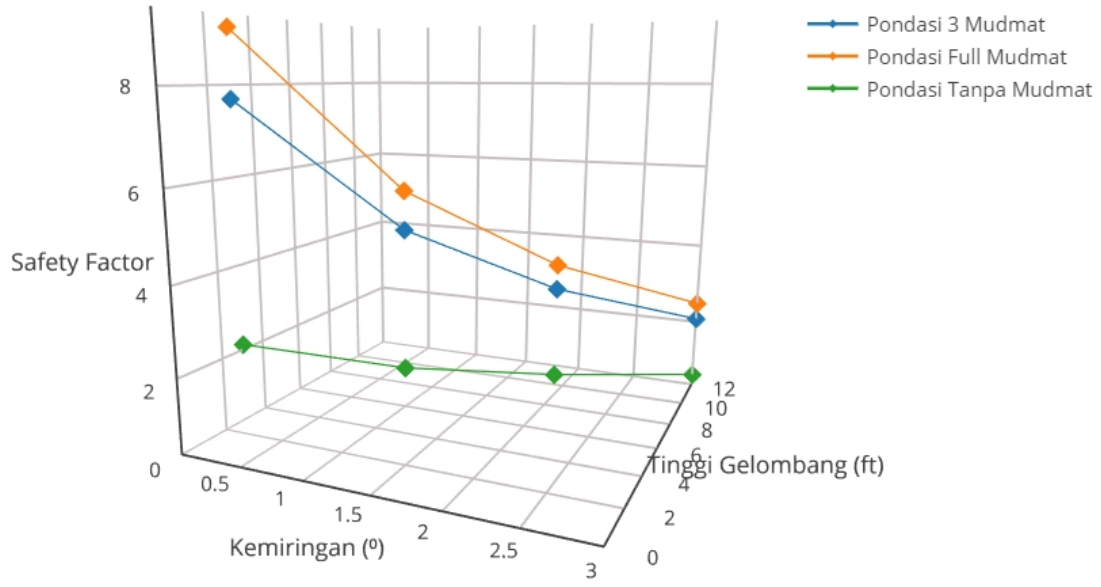
Sliding 90 Derajat



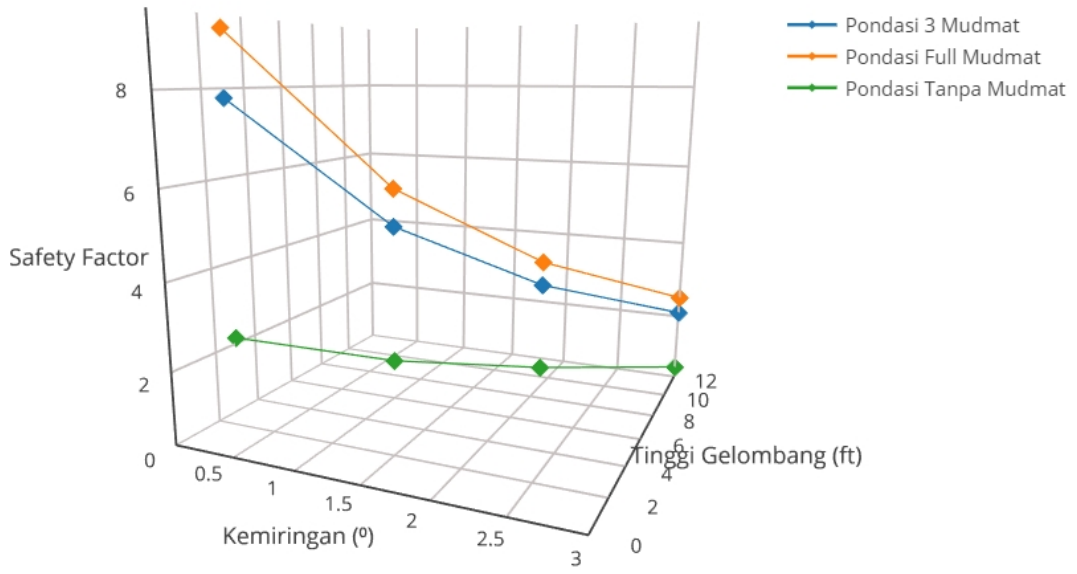
Sliding 120 Derajat



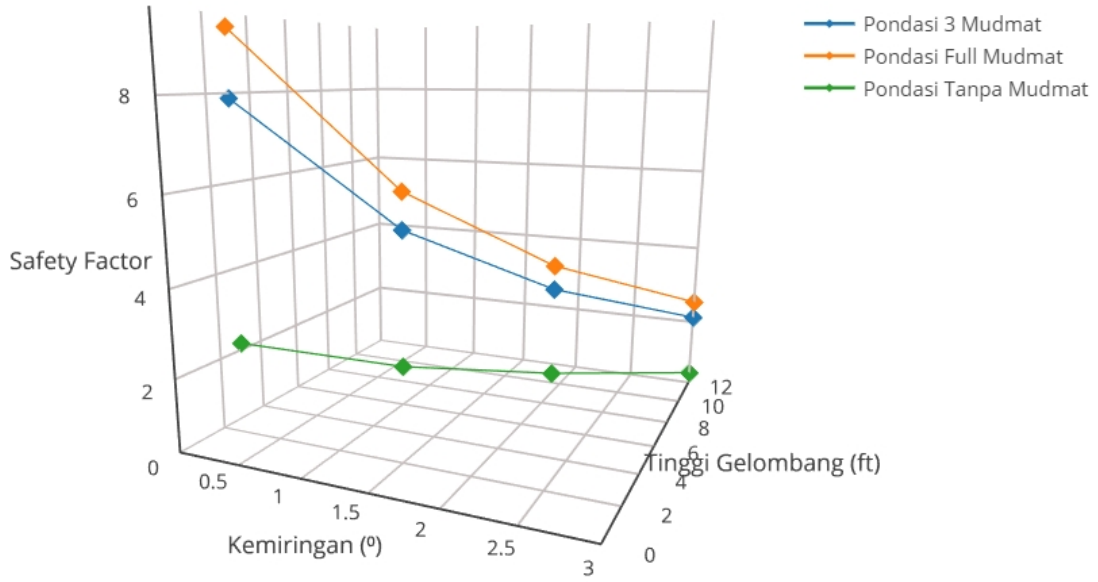
Sliding 150 Derajat



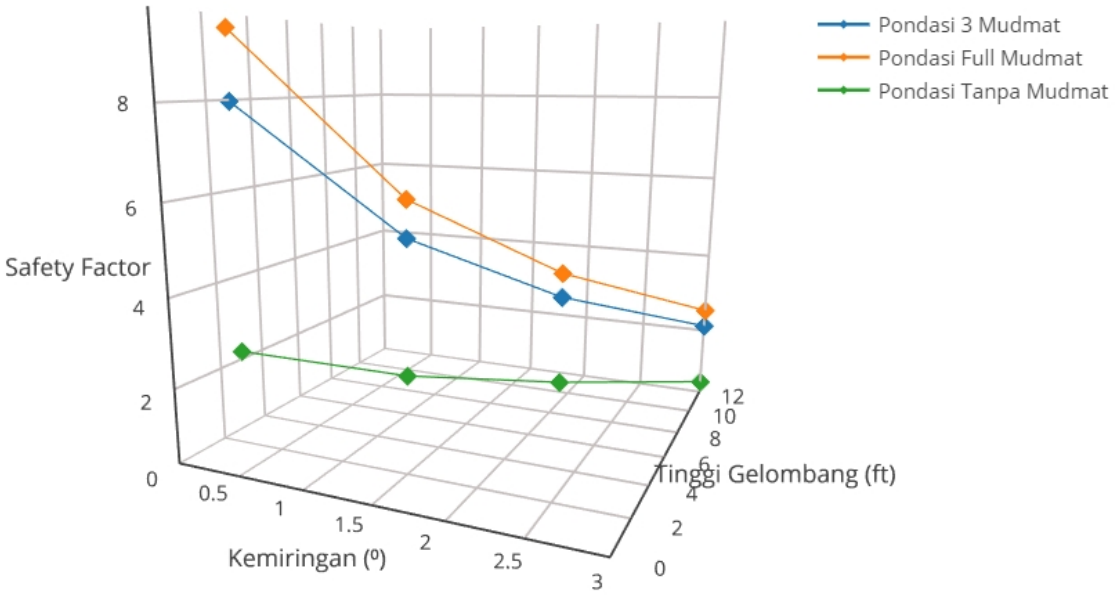
Sliding 180 Derajat



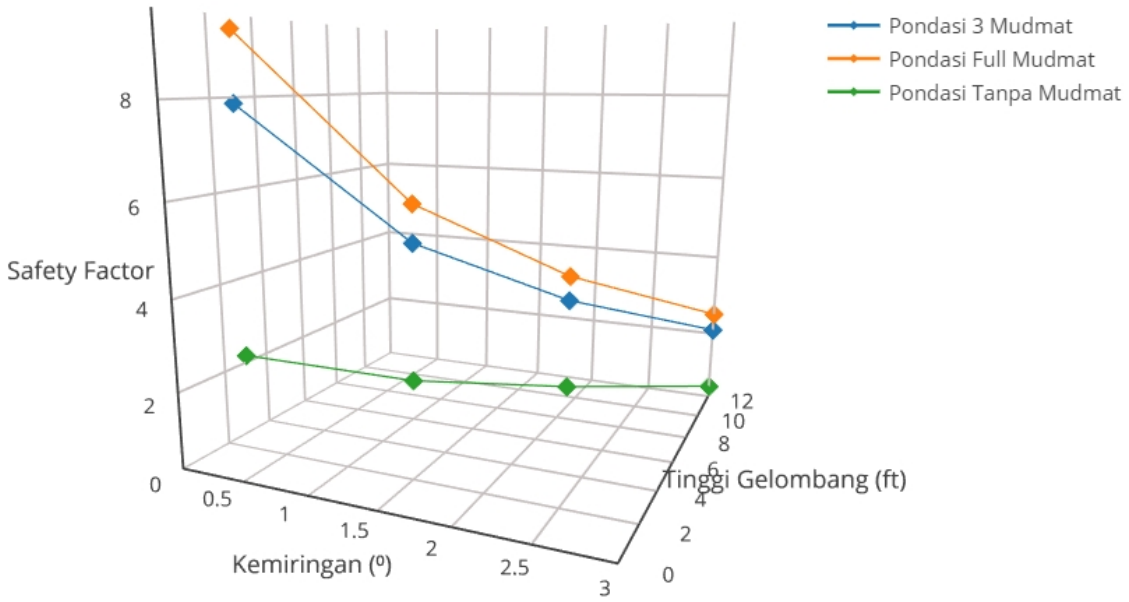
Sliding 210 Derajat



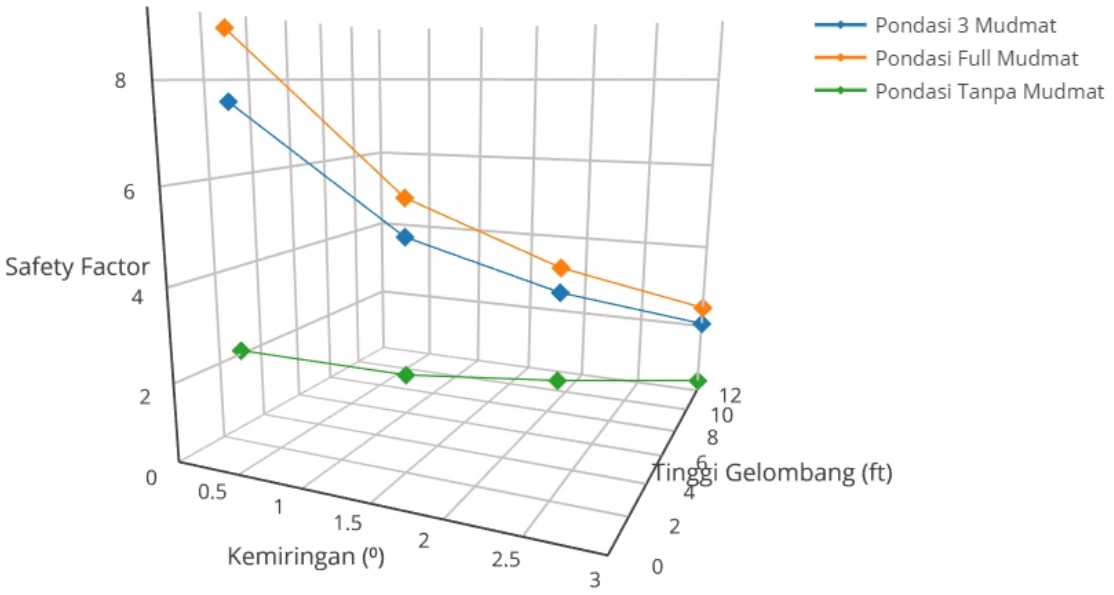
Sliding 240 Derajat



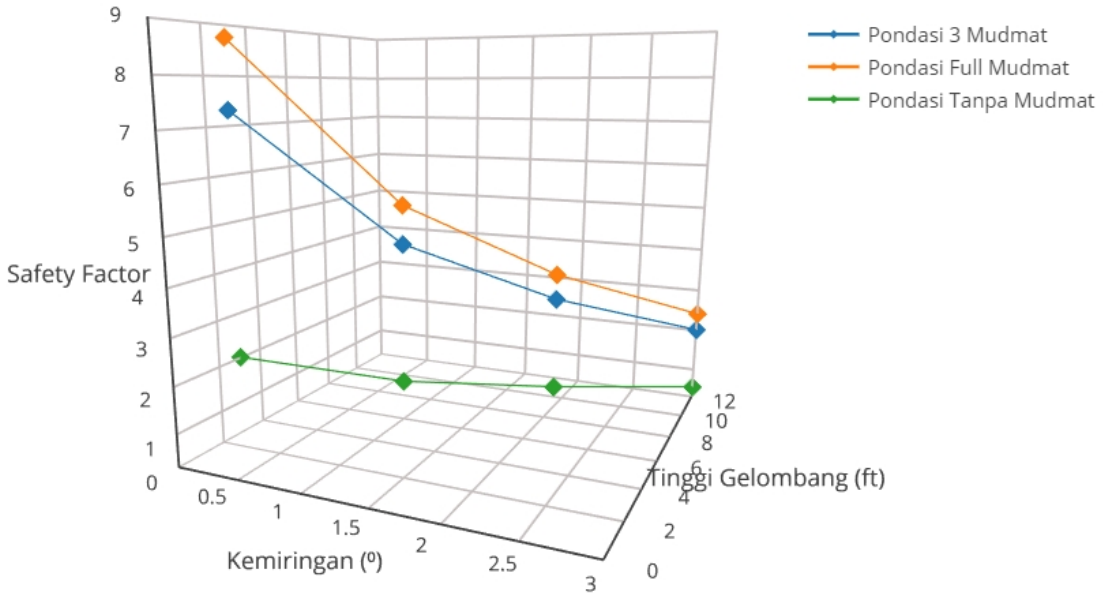
Sliding 270 Derajat



Sliding 300 Derajat



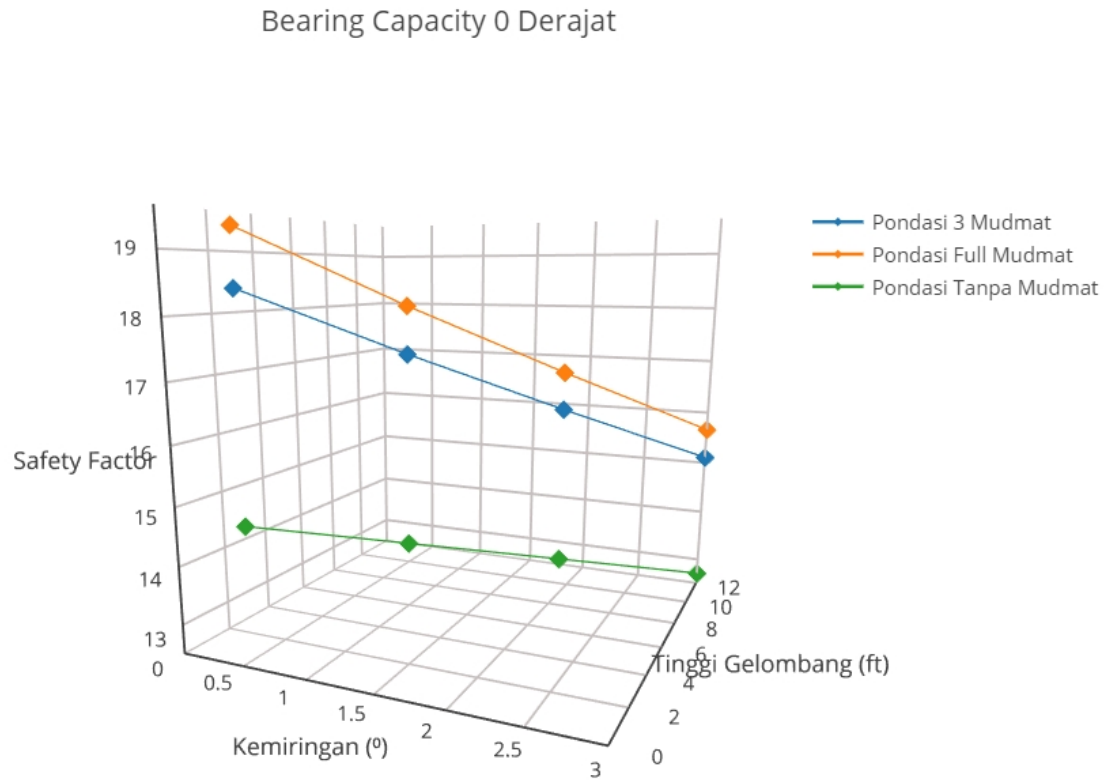
Sliding 330 Derajat

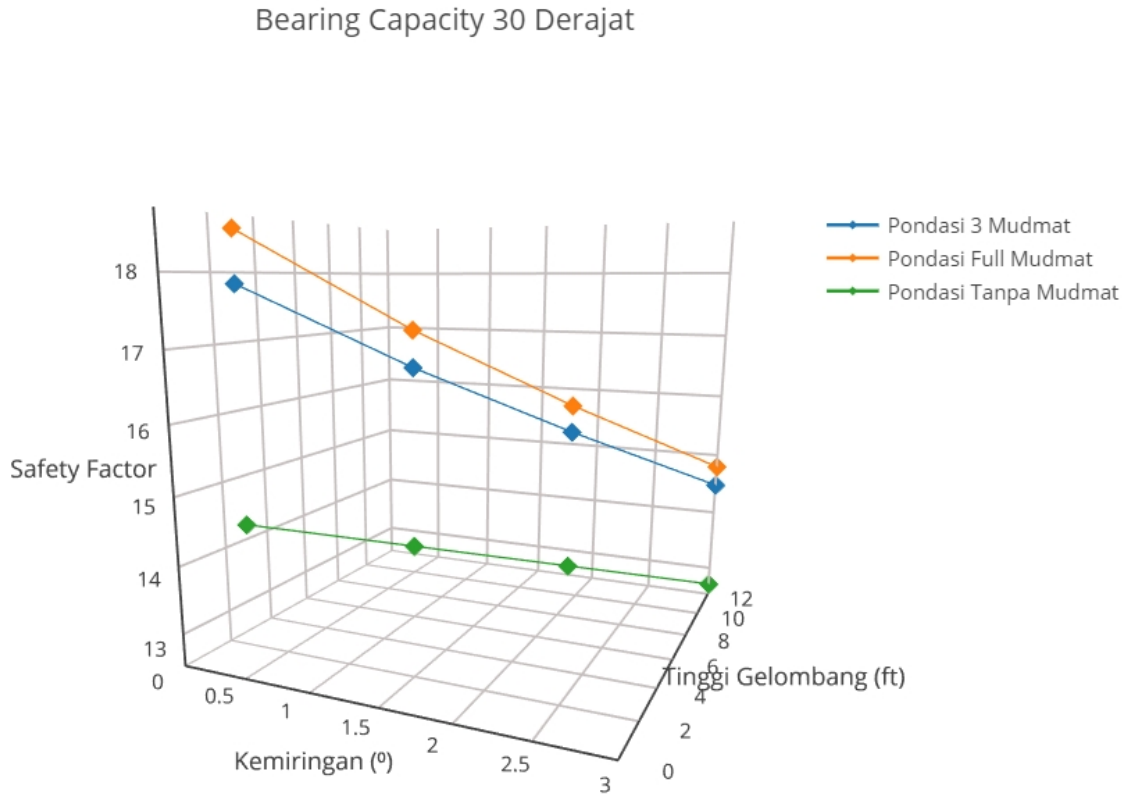


Lampiran

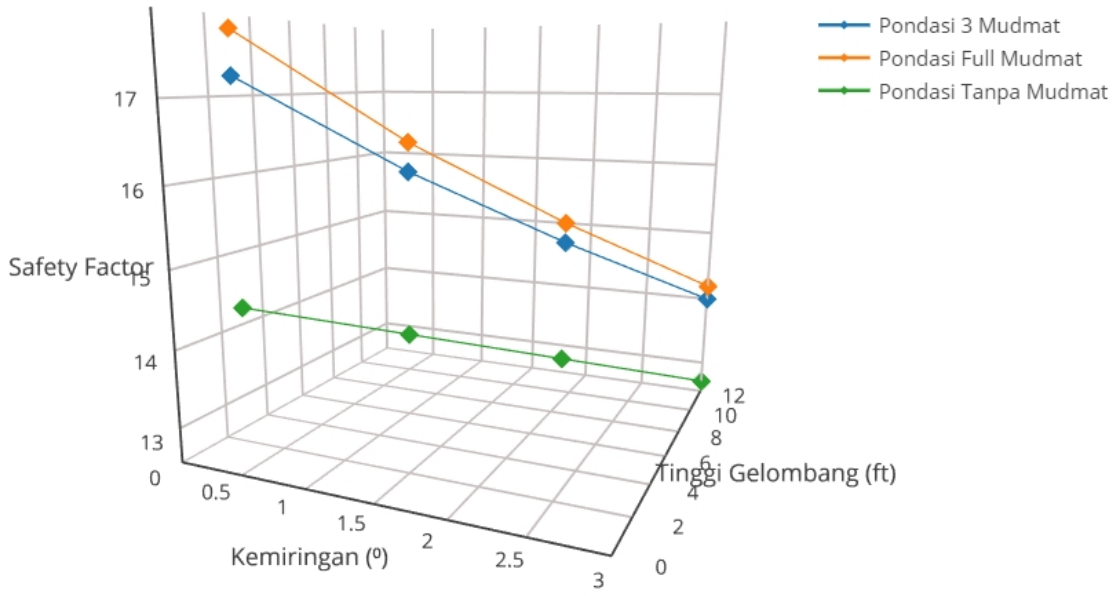
Grafik Performance Analisa Bearing Capacity 12 Arah Gelombang

Grafik Bearing Capacity

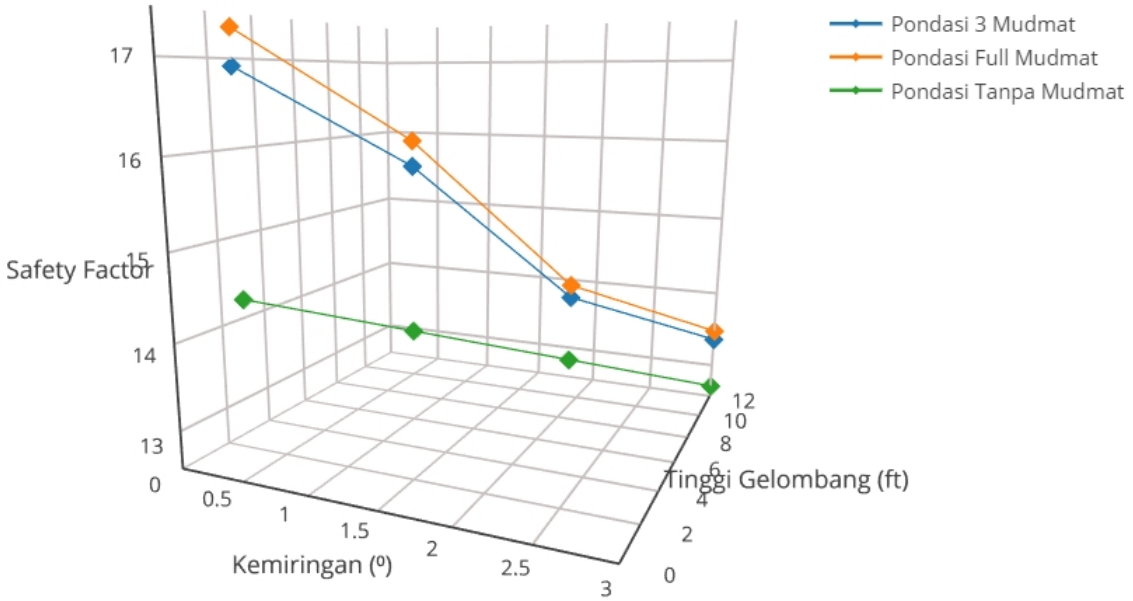




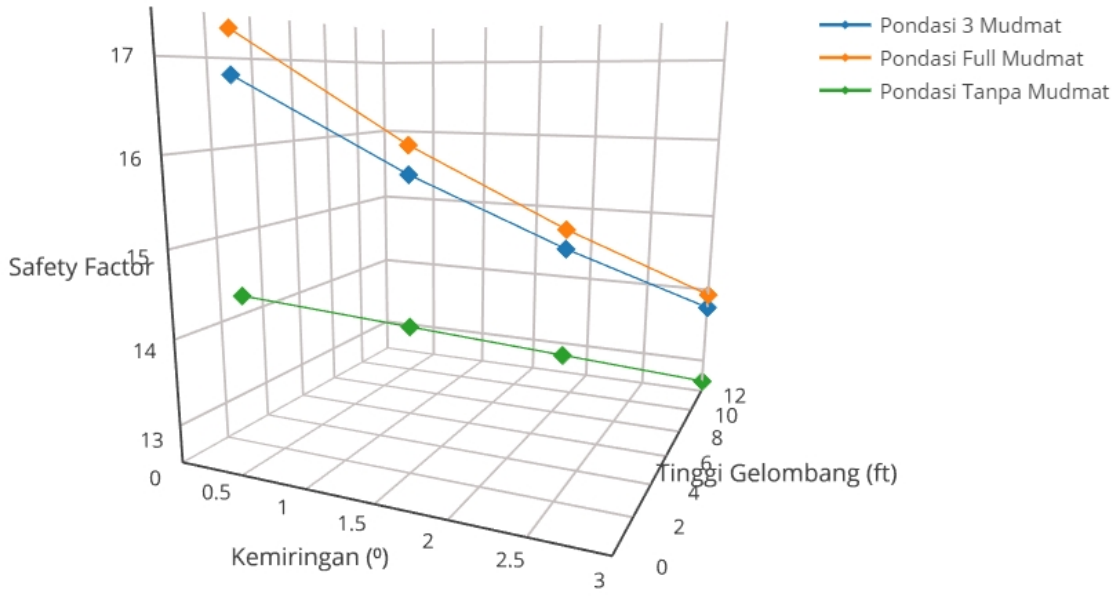
Bearing Capacity 60 Derajat



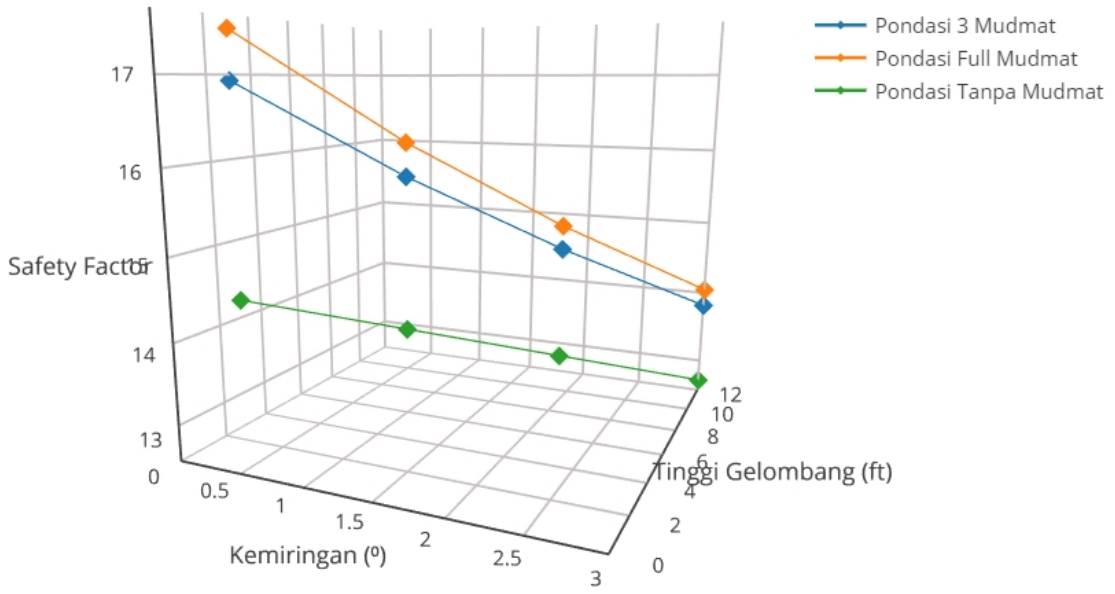
Bearing Capacity 90 Derajat



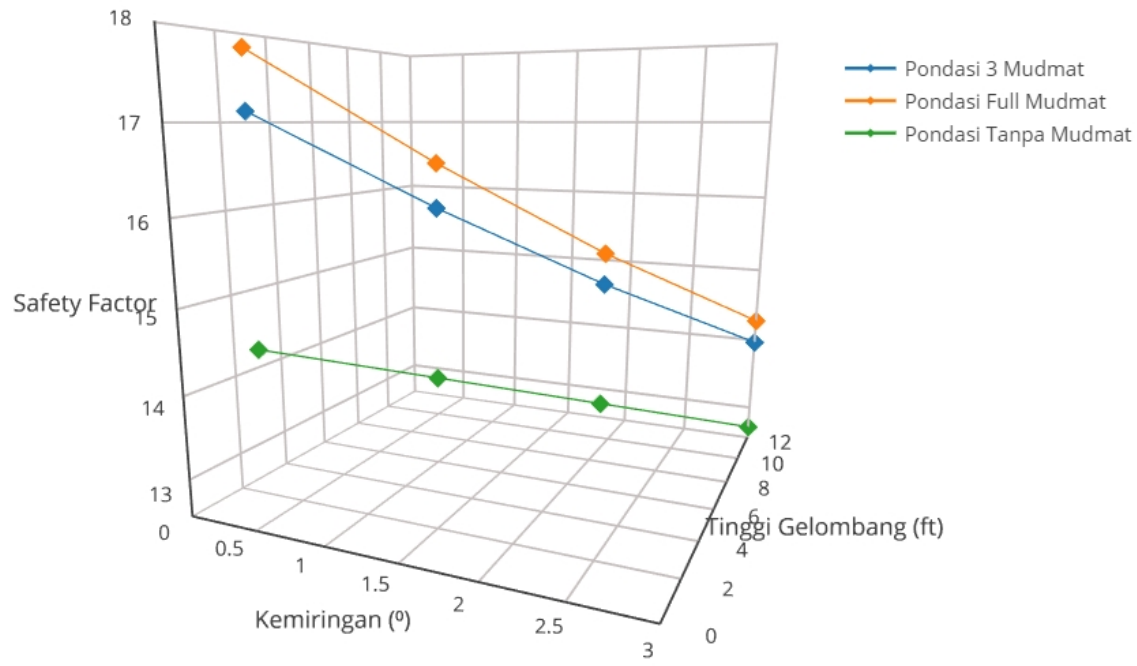
Bearing Capacity 120 Derajat



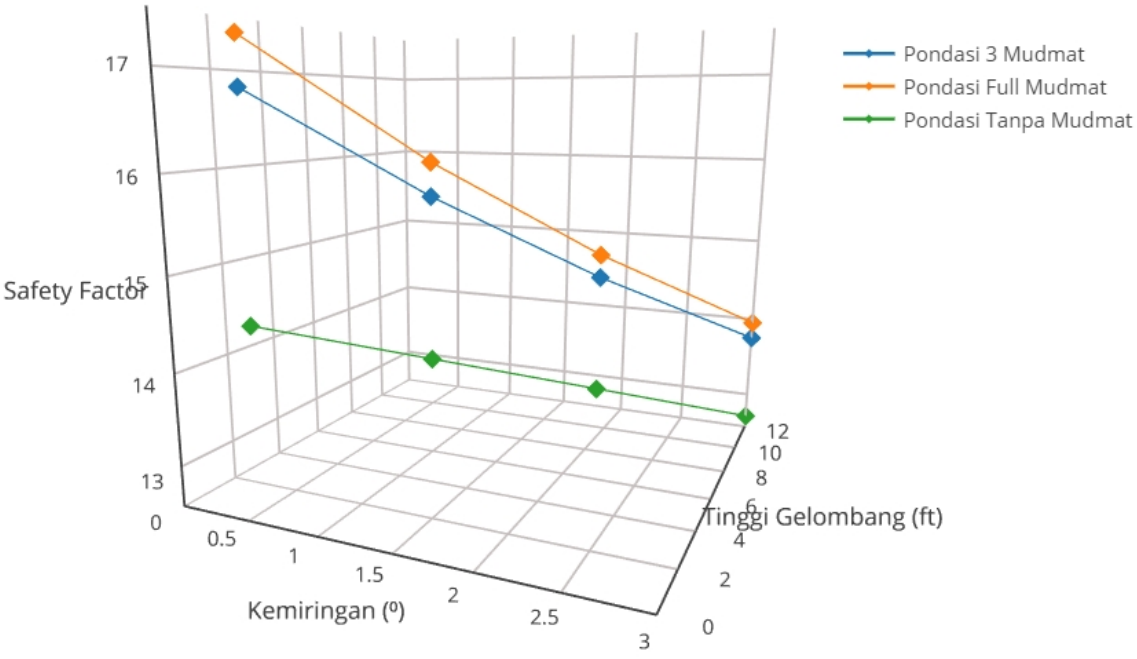
Bearing Capacity 150 Derajat



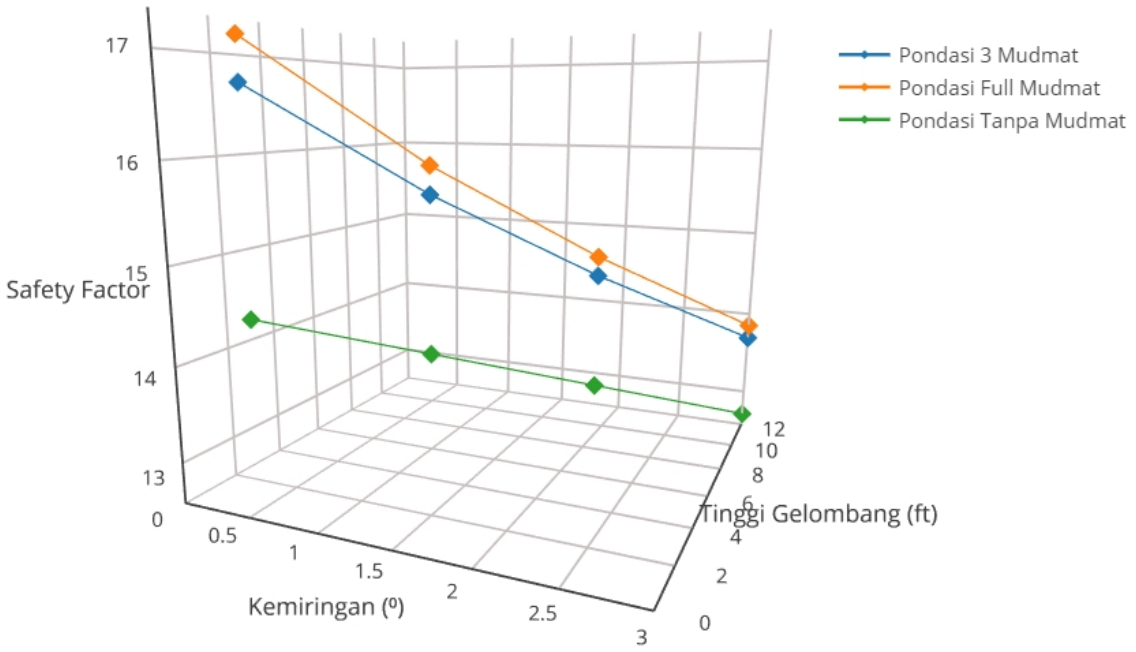
Bearing Capacity 180 Derajat



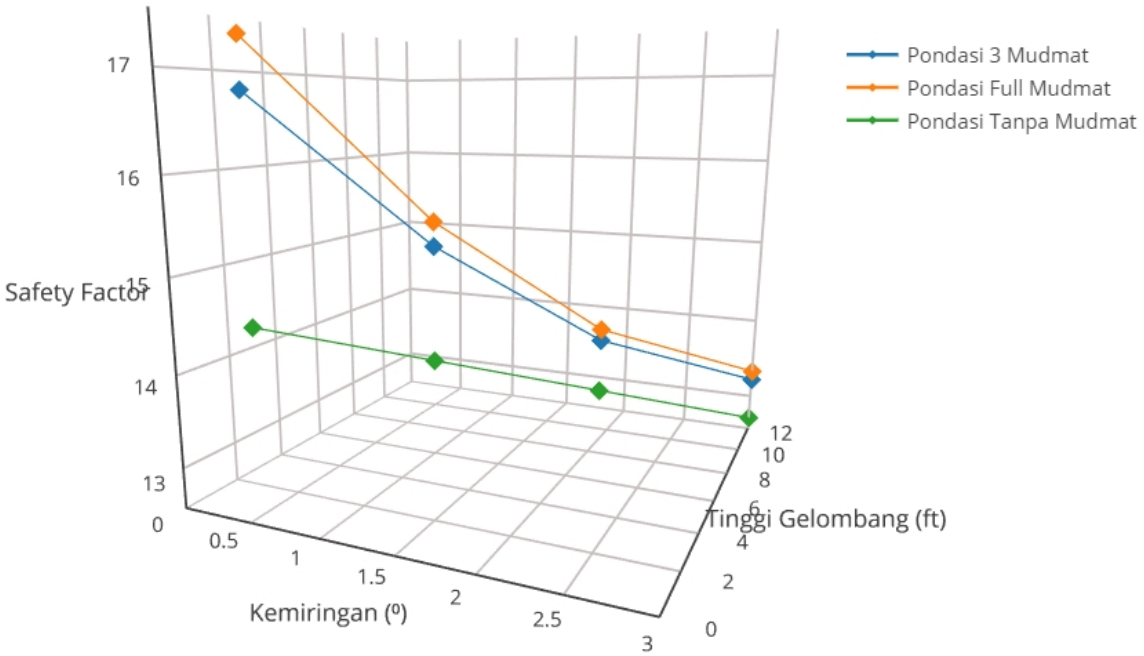
Bearing Capacity 210 Derajat



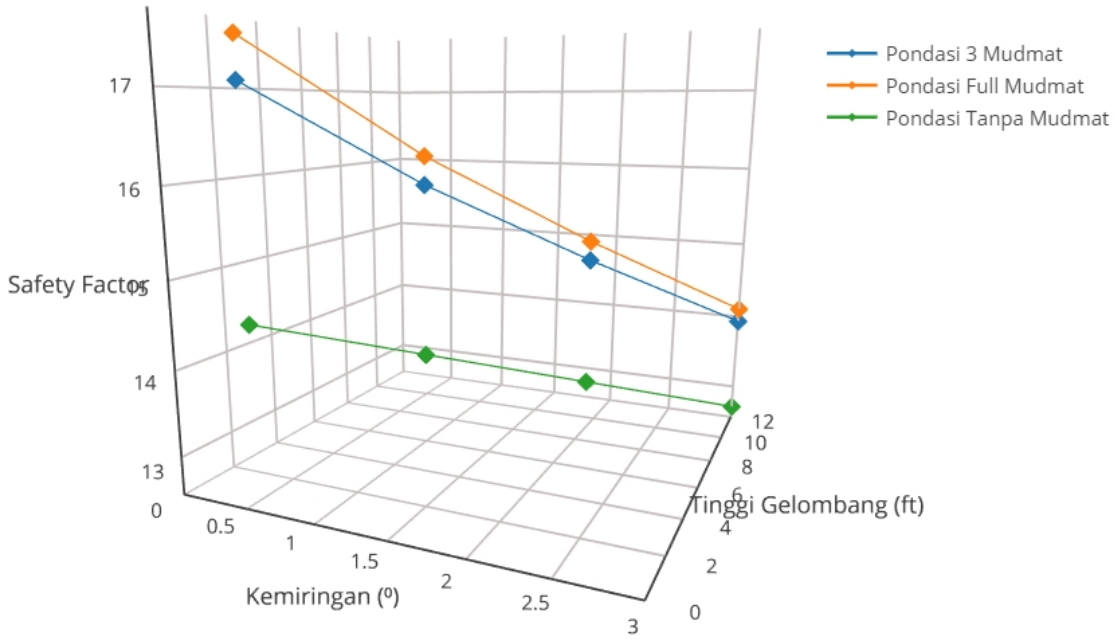
Bearing Capacity 240 Derajat



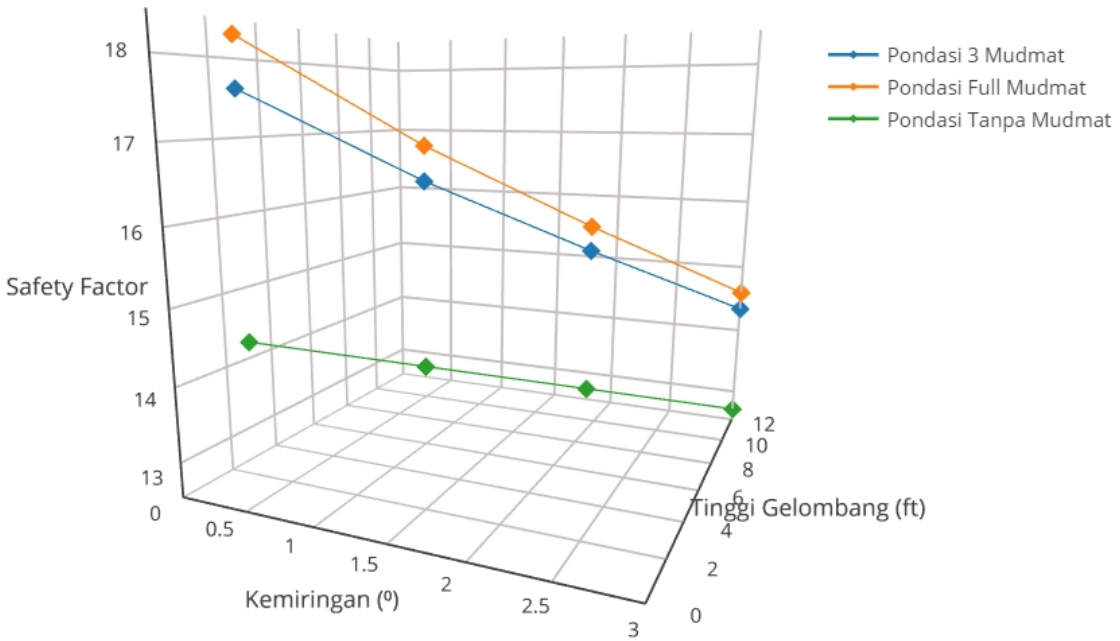
Bearing Capacity 270 Derajat



Bearing Capacity 300 Derajat



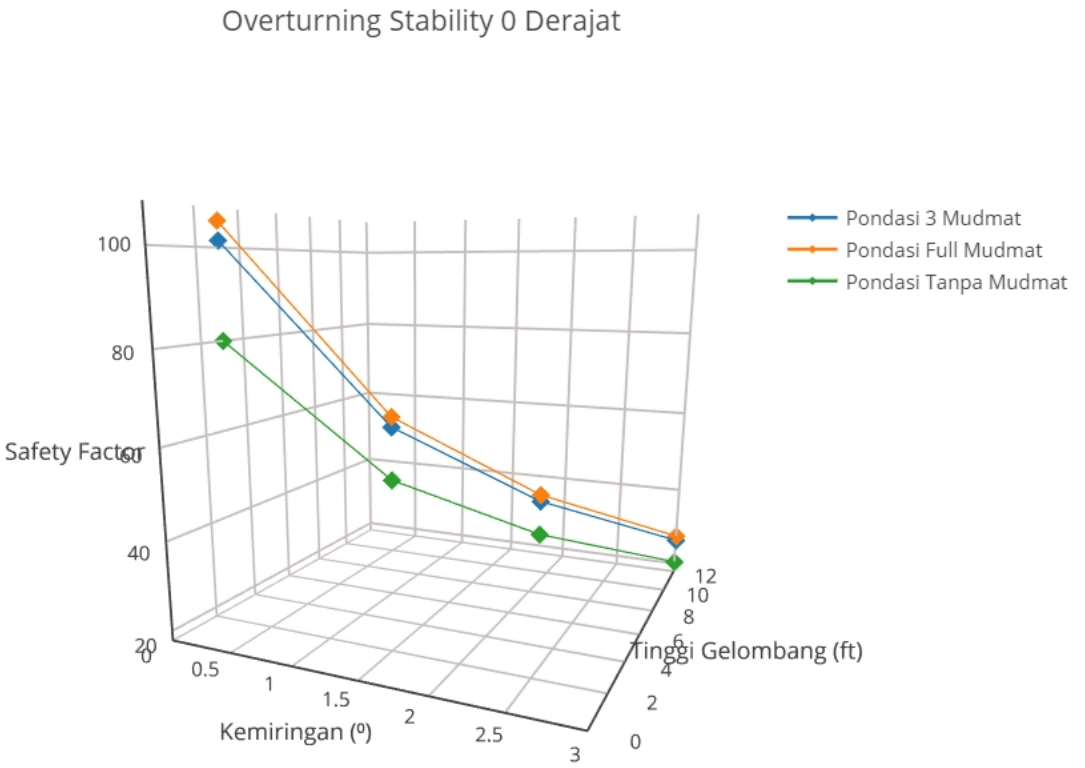
Bearing Capacity 330 Derajat

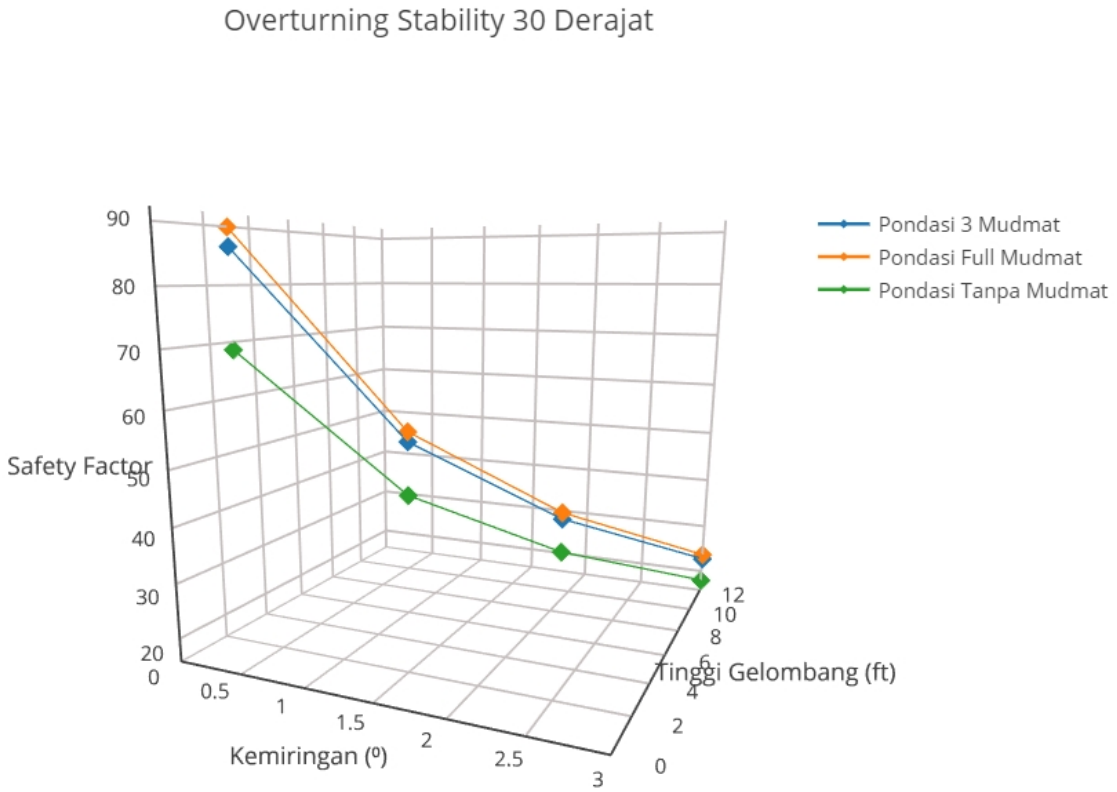


Lampiran

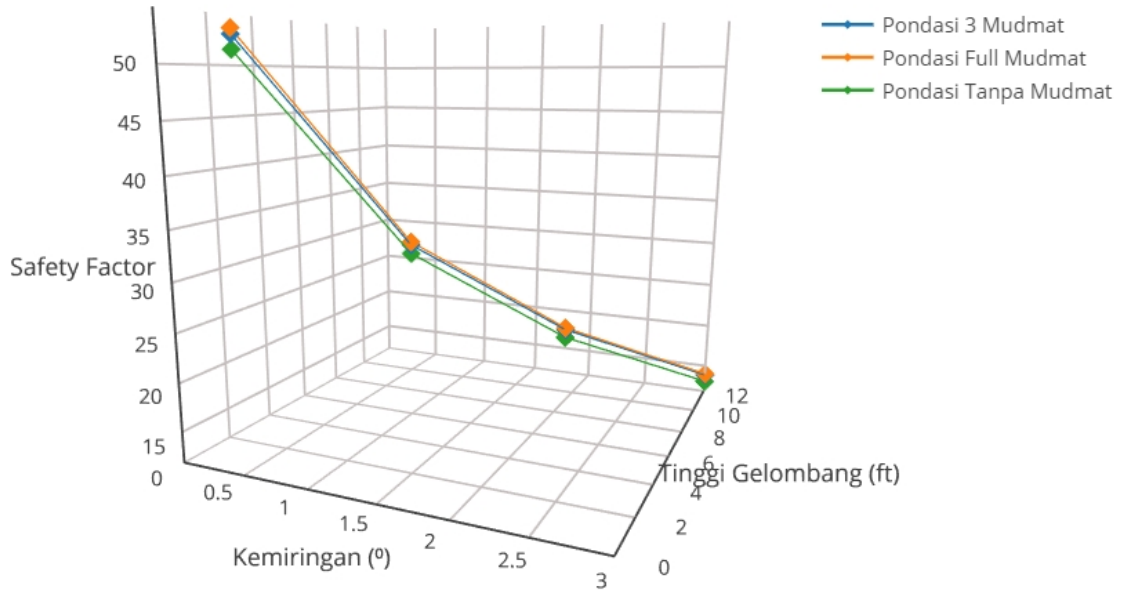
Grafik Performance Analisa Overturning Stability 12 Arah Gelombang

Grafik Overturning

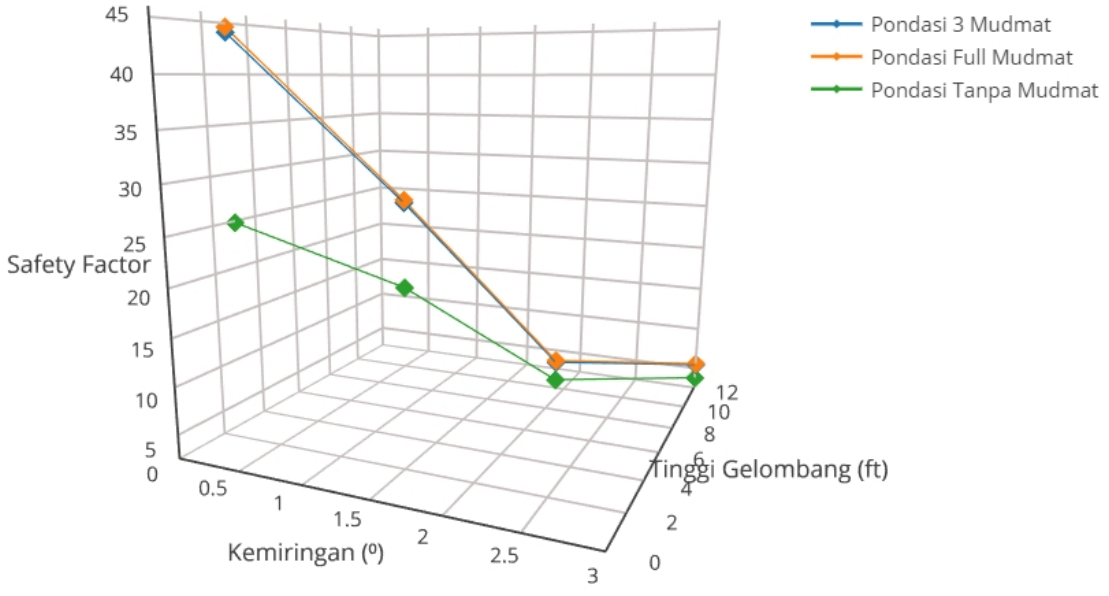




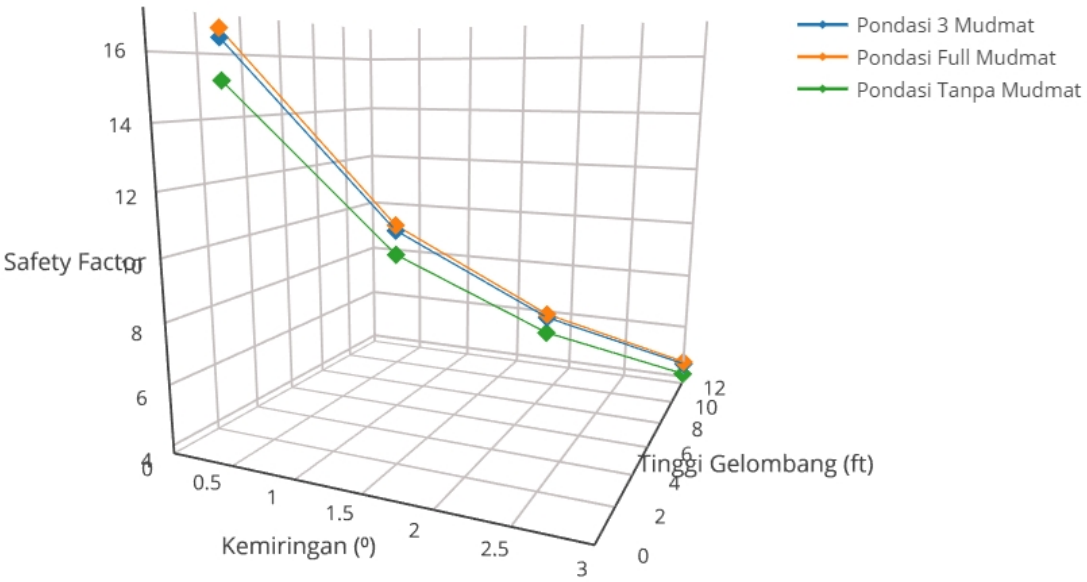
Overturning Stability 60 Derajat



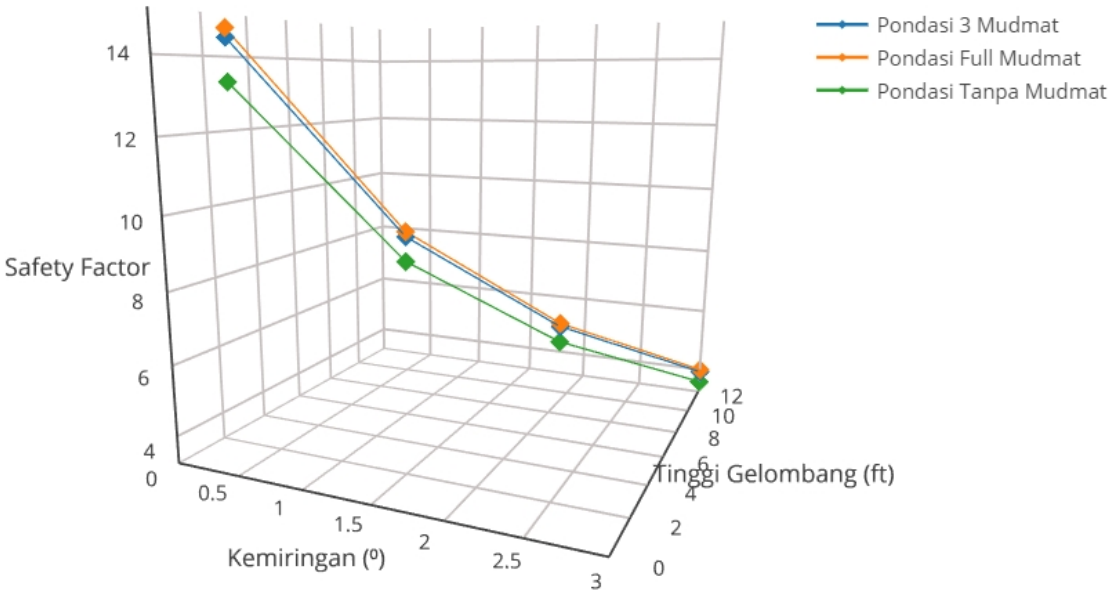
Overturning Stability 90 Derajat



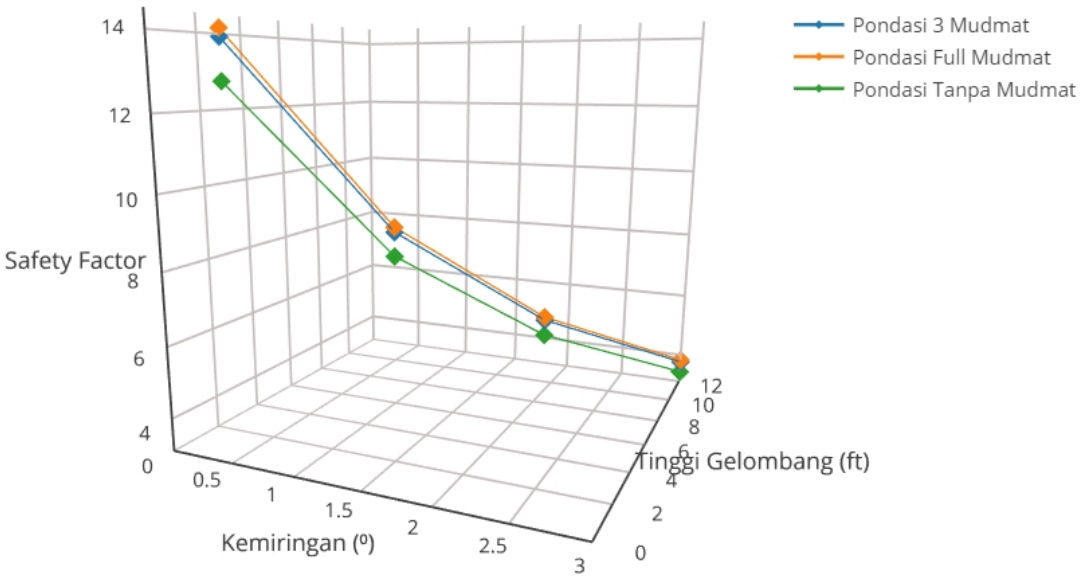
Overturning Stability 120 Derajat



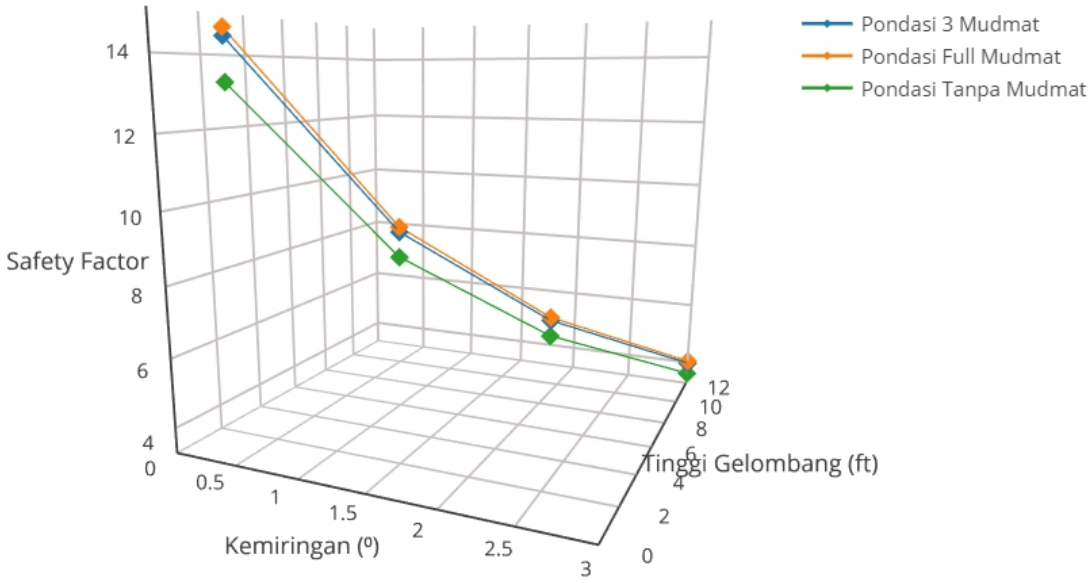
Overturning Stability 150 Derajat



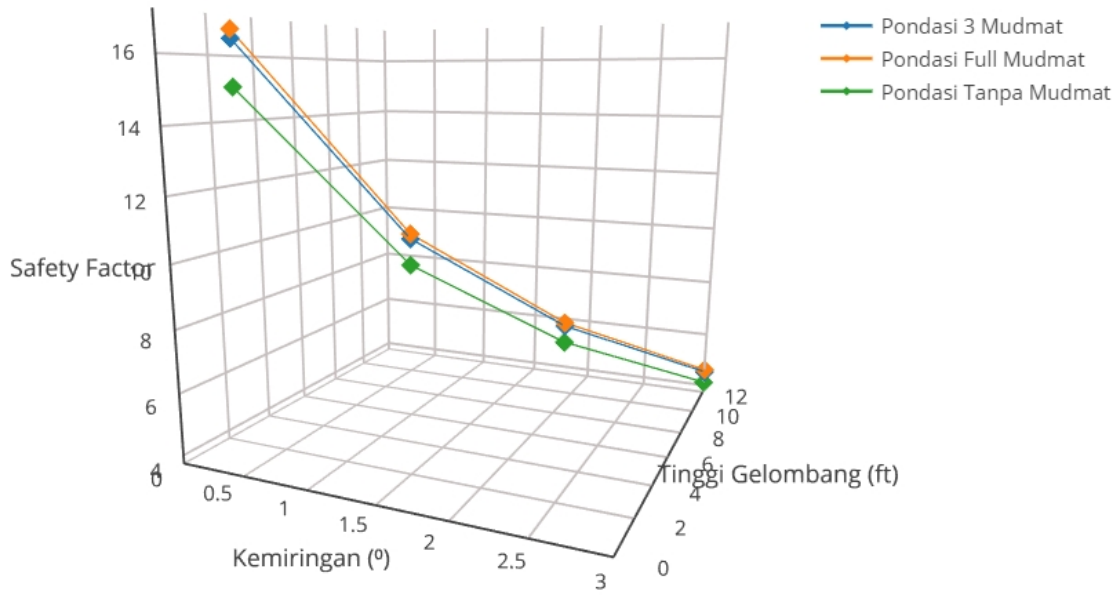
Overturning Stability 180 Derajat



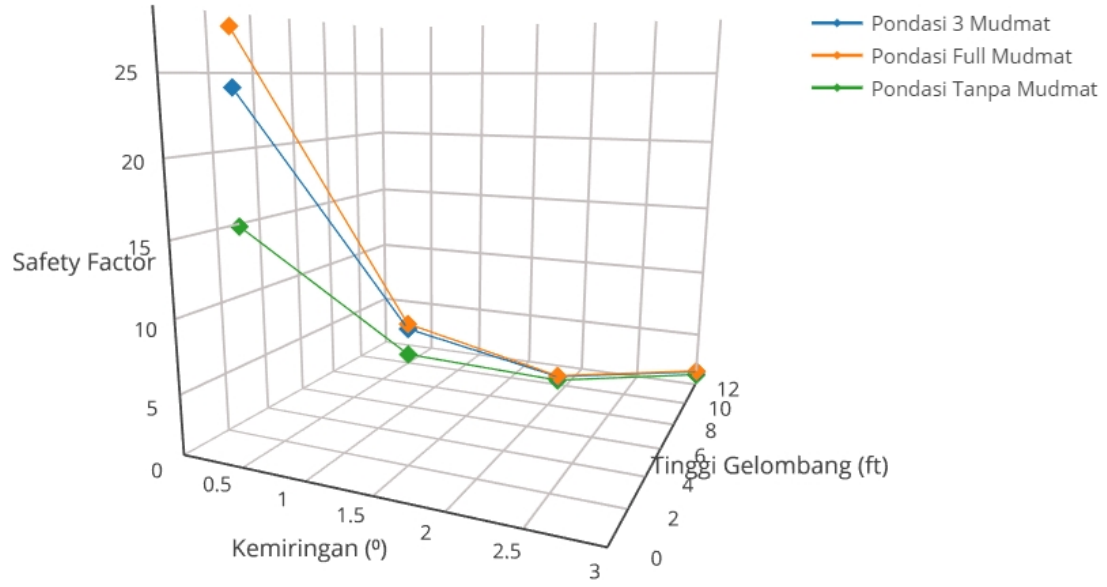
Overturning Stability 210 Derajat



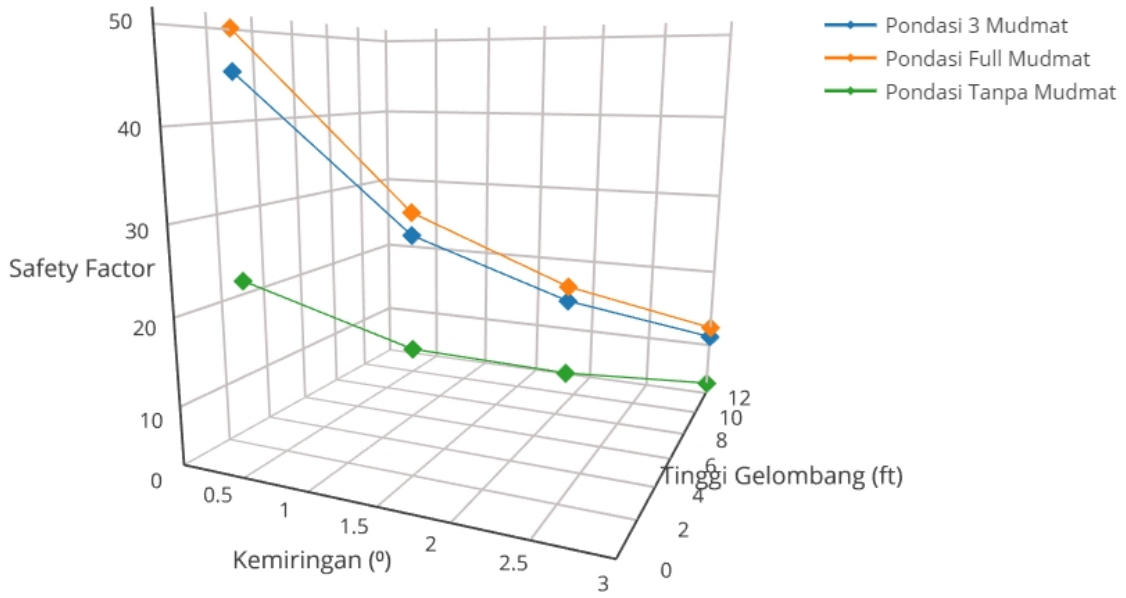
Overturning Stability 240 Derajat



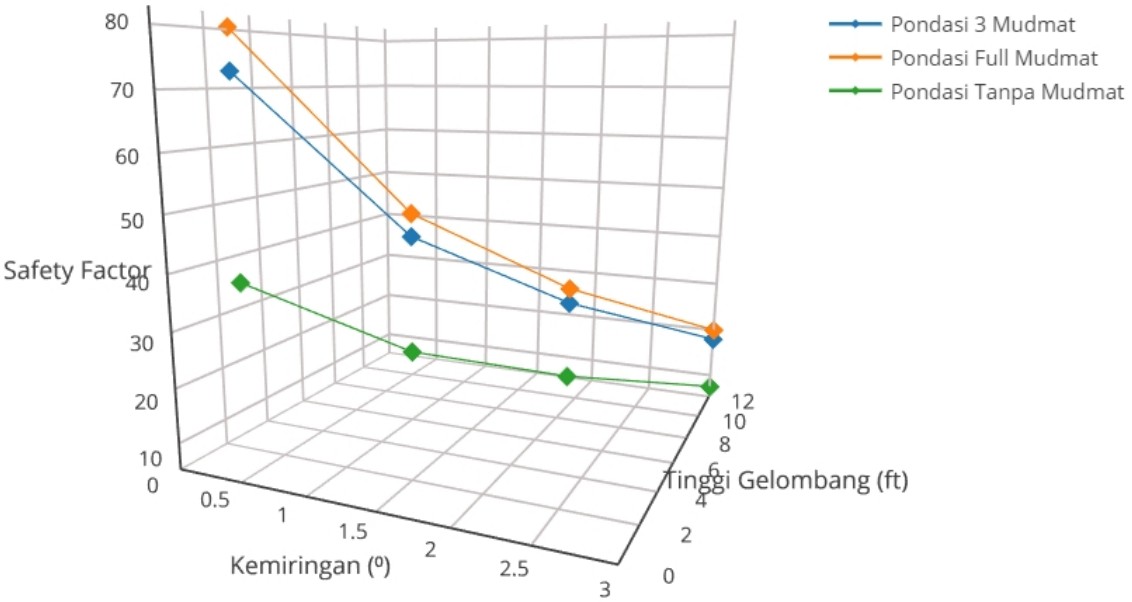
Overturning Stability 270 Derajat



Overturning Stability 300 Derajat



Overturning Stability 330 Derajat



Lampiran

Tabulasi dan Perhitungan Sliding Stability Semua Kemiringan

Lampiran Tabel Sliding Stability (Tanpa Mudmat 0 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat Sliding Analysis 0 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	31.90	31.90	65.30	2.05	1.5
	Y Direction	-0.49				
30 Degree	X Direction	26.98	30.65	65.30	2.13	1.5
	Y Direction	14.55				
60 Degree	X Direction	15.68	30.10	65.30	2.17	1.5
	Y Direction	25.69				
90 Degree	X Direction	0.18	30.53	65.30	2.14	1.5
	Y Direction	30.53				
120 Degree	X Direction	-15.69	30.83	65.30	2.12	1.5
	Y Direction	26.54				
150 Degree	X Direction	-26.76	30.77	65.30	2.12	1.5
	Y Direction	15.19				
180 Degree	X Direction	-30.47	30.47	65.30	2.14	1.5
	Y Direction	0.28				
210 Degree	X Direction	-26.49	30.21	65.30	2.16	1.5
	Y Direction	-14.53				
240 Degree	X Direction	-15.38	29.92	65.30	2.18	1.5
	Y Direction	-25.66				
270 Degree	X Direction	0.10	30.21	65.30	2.16	1.5
	Y Direction	-30.21				
300 Degree	X Direction	16.05	31.40	65.30	2.08	1.5
	Y Direction	-26.99				
330 Degree	X Direction	28.16	32.37	65.30	2.02	1.5
	Y Direction	-15.97				

LOAD CASE				Tanpa Mudmat Sliding Analysis 0 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	47.82	47.83	65.30	1.37	1.5
	Y Direction	-0.7				
30 Degree	X Direction	40.99	46.50	65.30	1.40	1.5
	Y Direction	21.95				
60 Degree	X Direction	23.50	45.24	65.30	1.44	1.5
	Y Direction	38.66				
90 Degree	X Direction	0.22	45.10	65.30	1.45	1.5
	Y Direction	45.1				
120 Degree	X Direction	-22.72	45.01	65.30	1.45	1.5
	Y Direction	38.85				
150 Degree	X Direction	-39.10	44.97	65.30	1.45	1.5
	Y Direction	22.22				
180 Degree	X Direction	-44.73	44.73	65.30	1.46	1.5
	Y Direction	0.14				
210 Degree	X Direction	-38.65	44.40	65.30	1.47	1.5
	Y Direction	-21.86				
240 Degree	X Direction	-22.46	44.48	65.30	1.47	1.5
	Y Direction	-38.39				
270 Degree	X Direction	0.16	45.19	65.30	1.45	1.5
	Y Direction	-45.19				
300 Degree	X Direction	23.57	46.38	65.30	1.41	1.5
	Y Direction	-39.95				
330 Degree	X Direction	41.56	47.79	65.30	1.37	1.5
	Y Direction	-23.6				

LOAD CASE H=9 ft |T=5.24 s				Tanpa Mudmat Sliding Analysis 0 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Total Lateral Force (kips)	Sliding Resistance (kips)	Factor of Safety	Min SF
0 Degree	X Direction	63.84	63.85	65.30	1.02	1.5
	Y Direction	-1				
30 Degree	X Direction	55.28	62.69	65.30	1.04	1.5
	Y Direction	29.57				
60 Degree	X Direction	31.98	61.17	65.30	1.07	1.5
	Y Direction	52.15				
90 Degree	X Direction	0.68	60.61	65.30	1.08	1.5
	Y Direction	60.61				
120 Degree	X Direction	-30.68	60.94	65.30	1.07	1.5
	Y Direction	52.65				
150 Degree	X Direction	-53.38	61.25	65.30	1.07	1.5
	Y Direction	30.04				
180 Degree	X Direction	-61.49	61.49	65.30	1.06	1.5
	Y Direction	-0.35				
210 Degree	X Direction	-52.81	60.92	65.30	1.07	1.5
	Y Direction	-30.38				
240 Degree	X Direction	-30.18	60.61	65.30	1.08	1.5
	Y Direction	-52.56				
270 Degree	X Direction	0.53	60.94	65.30	1.07	1.5
	Y Direction	-60.94				
300 Degree	X Direction	31.28	61.47	65.30	1.06	1.5
	Y Direction	-52.92				
330 Degree	X Direction	55.02	63.27	65.30	1.03	1.5
	Y Direction	-31.24				

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat Sliding Analysis 0 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Total Lateral Force (kips)	Sliding Resistance (kips)	Factor of Safety	Min SF
0 Degree	X Direction	83.52	83.53	65.30	0.78	1.5
	Y Direction	-1.31				
30 Degree	X Direction	72.52	82.24	65.30	0.79	1.5
	Y Direction	38.79				
60 Degree	X Direction	42.37	81.28	65.30	0.80	1.5
	Y Direction	69.36				
90 Degree	X Direction	0.77	81.25	65.30	0.80	1.5
	Y Direction	81.25				
120 Degree	X Direction	-40.73	80.91	65.30	0.81	1.5
	Y Direction	69.91				
150 Degree	X Direction	-70.30	80.76	65.30	0.81	1.5
	Y Direction	39.76				
180 Degree	X Direction	-80.07	80.07	65.30	0.82	1.5
	Y Direction	-0.53				
210 Degree	X Direction	-68.53	79.25	65.30	0.82	1.5
	Y Direction	-39.81				
240 Degree	X Direction	-39.61	79.30	65.30	0.82	1.5
	Y Direction	-68.7				
270 Degree	X Direction	0.59	80.00	65.30	0.82	1.5
	Y Direction	-80				
300 Degree	X Direction	41.21	81.35	65.30	0.80	1.5
	Y Direction	-70.14				
330 Degree	X Direction	72.26	83.24	65.30	0.78	1.5
	Y Direction	-41.33				

Lampiran Tabel Sliding Stability (Tanpa Mudmat 1 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat Sliding Analysis 1 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	35.53	35.53	65.30	1.84	1.5
	Y Direction	-0.57				
30 Degree	X Direction	30.02	34.12	65.30	1.91	1.5
	Y Direction	16.22				
60 Degree	X Direction	17.45	33.55	65.30	1.95	1.5
	Y Direction	28.66				
90 Degree	X Direction	0.22	34.10	65.30	1.91	1.5
	Y Direction	34.1				
120 Degree	X Direction	-17.47	34.41	65.30	1.90	1.5
	Y Direction	29.65				
150 Degree	X Direction	-29.77	34.26	65.30	1.91	1.5
	Y Direction	16.96				
180 Degree	X Direction	-33.86	33.86	65.30	1.93	1.5
	Y Direction	0.33				
210 Degree	X Direction	-29.45	33.61	65.30	1.94	1.5
	Y Direction	-16.19				
240 Degree	X Direction	-17.11	33.35	65.30	1.96	1.5
	Y Direction	-28.63				
270 Degree	X Direction	0.11	33.73	65.30	1.94	1.5
	Y Direction	-33.73				
300 Degree	X Direction	17.88	35.08	65.30	1.86	1.5
	Y Direction	-30.18				
330 Degree	X Direction	31.40	36.13	65.30	1.81	1.5
	Y Direction	-17.88				

LOAD CASE				Tanpa Mudmat Sliding Analysis 1 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	54.13	54.14	65.30	1.21	1.5
	Y Direction	-0.81				
30 Degree	X Direction	46.39	52.63	65.30	1.24	1.5
	Y Direction	24.86				
60 Degree	X Direction	26.59	51.25	65.30	1.27	1.5
	Y Direction	43.81				
90 Degree	X Direction	0.26	51.13	65.30	1.28	1.5
	Y Direction	51.13				
120 Degree	X Direction	-25.68	50.97	65.30	1.28	1.5
	Y Direction	44.03				
150 Degree	X Direction	-44.18	50.85	65.30	1.28	1.5
	Y Direction	25.17				
180 Degree	X Direction	-50.52	50.52	65.30	1.29	1.5
	Y Direction	0.17				
210 Degree	X Direction	-43.65	50.18	65.30	1.30	1.5
	Y Direction	-24.76				
240 Degree	X Direction	-25.37	50.36	65.30	1.30	1.5
	Y Direction	-43.5				
270 Degree	X Direction	0.30	51.23	65.30	1.27	1.5
	Y Direction	-51.23				
300 Degree	X Direction	26.67	52.59	65.30	1.24	1.5
	Y Direction	-45.32				
330 Degree	X Direction	47.05	54.14	65.30	1.21	1.5
	Y Direction	-26.79				

LOAD CASE H=9 ft |T=5.24 s				Tanpa Mudmat Sliding Analysis 1 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Total Lateral Force (kips)	Sliding Resistance (kips)	Factor of Safety	Min SF
0 Degree	X Direction	72.85	72.86	65.30	0.90	1.5
	Y Direction	-1.17				
30 Degree	X Direction	63.08	71.55	65.30	0.91	1.5
	Y Direction	33.77				
60 Degree	X Direction	36.49	69.85	65.30	0.93	1.5
	Y Direction	59.56				
90 Degree	X Direction	0.80	69.24	65.30	0.94	1.5
	Y Direction	69.24				
120 Degree	X Direction	-34.97	69.59	65.30	0.94	1.5
	Y Direction	60.16				
150 Degree	X Direction	-60.86	69.86	65.30	0.93	1.5
	Y Direction	34.31				
180 Degree	X Direction	-70.11	70.11	65.30	0.93	1.5
	Y Direction	-0.41				
210 Degree	X Direction	-60.19	69.48	65.30	0.94	1.5
	Y Direction	-34.71				
240 Degree	X Direction	-34.39	69.20	65.30	0.94	1.5
	Y Direction	-60.05				
270 Degree	X Direction	0.62	69.63	65.30	0.94	1.5
	Y Direction	-69.63				
300 Degree	X Direction	35.67	70.21	65.30	0.93	1.5
	Y Direction	-60.47				
330 Degree	X Direction	62.77	72.22	65.30	0.90	1.5
	Y Direction	-35.72				

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat Sliding Analysis 1 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Total Lateral Force (kips)	Sliding Resistance (kips)	Factor of Safety	Min SF
0 Degree	X Direction	95.84	95.85	65.30	0.68	1.5
	Y Direction	-1.54				
30 Degree	X Direction	83.22	94.39	65.30	0.69	1.5
	Y Direction	44.54				
60 Degree	X Direction	48.63	93.35	65.30	0.70	1.5
	Y Direction	79.68				
90 Degree	X Direction	0.90	93.36	65.30	0.70	1.5
	Y Direction	93.36				
120 Degree	X Direction	-46.72	92.92	65.30	0.70	1.5
	Y Direction	80.32				
150 Degree	X Direction	-80.62	92.65	65.30	0.70	1.5
	Y Direction	45.66				
180 Degree	X Direction	-91.81	91.81	65.30	0.71	1.5
	Y Direction	-0.61				
210 Degree	X Direction	-78.57	90.90	65.30	0.72	1.5
	Y Direction	-45.72				
240 Degree	X Direction	-45.41	91.04	65.30	0.72	1.5
	Y Direction	-78.91				
270 Degree	X Direction	0.69	91.90	65.30	0.71	1.5
	Y Direction	-91.9				
300 Degree	X Direction	47.28	93.44	65.30	0.70	1.5
	Y Direction	-80.59				
330 Degree	X Direction	82.91	95.55	65.30	0.68	1.5
	Y Direction	-47.5				

Lampiran Tabel Sliding Stability (Tanpa Mudmat 2 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat Sliding Analysis 2 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	38.90	38.91	65.30	1.68	1.5
	Y Direction	-0.65				
30 Degree	X Direction	32.84	37.33	65.30	1.75	1.5
	Y Direction	17.76				
60 Degree	X Direction	19.09	36.76	65.30	1.78	1.5
	Y Direction	31.41				
90 Degree	X Direction	0.24	37.41	65.30	1.75	1.5
	Y Direction	37.41				
120 Degree	X Direction	-19.11	37.73	65.30	1.73	1.5
	Y Direction	32.53				
150 Degree	X Direction	-32.55	37.49	65.30	1.74	1.5
	Y Direction	18.6				
180 Degree	X Direction	-37.01	37.01	65.30	1.76	1.5
	Y Direction	0.37				
210 Degree	X Direction	-32.18	36.74	65.30	1.78	1.5
	Y Direction	-17.73				
240 Degree	X Direction	-18.71	36.53	65.30	1.79	1.5
	Y Direction	-31.38				
270 Degree	X Direction	0.12	36.98	65.30	1.77	1.5
	Y Direction	-36.98				
300 Degree	X Direction	19.58	38.48	65.30	1.70	1.5
	Y Direction	-33.13				
330 Degree	X Direction	34.40	39.61	65.30	1.65	1.5
	Y Direction	-19.64				

LOAD CASE				Tanpa Mudmat Sliding Analysis 2 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	59.98	59.99	65.30	1.09	1.5
	Y Direction	-0.92				
30 Degree	X Direction	51.38	58.30	65.30	1.12	1.5
	Y Direction	27.56				
60 Degree	X Direction	29.45	56.81	65.30	1.15	1.5
	Y Direction	48.58				
90 Degree	X Direction	0.30	56.71	65.30	1.15	1.5
	Y Direction	56.71				
120 Degree	X Direction	-28.42	56.50	65.30	1.16	1.5
	Y Direction	48.83				
150 Degree	X Direction	-48.88	56.29	65.30	1.16	1.5
	Y Direction	27.91				
180 Degree	X Direction	-55.89	55.89	65.30	1.17	1.5
	Y Direction	0.19				
210 Degree	X Direction	-48.29	55.54	65.30	1.18	1.5
	Y Direction	-27.44				
240 Degree	X Direction	-28.08	55.81	65.30	1.17	1.5
	Y Direction	-48.23				
270 Degree	X Direction	0.22	56.82	65.30	1.15	1.5
	Y Direction	-56.82				
300 Degree	X Direction	29.54	58.32	65.30	1.12	1.5
	Y Direction	-50.29				
330 Degree	X Direction	52.14	60.03	65.30	1.09	1.5
	Y Direction	-29.74				

LOAD CASE				Tanpa Mudmat Sliding Analysis 2 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	81.19	81.20	65.30	0.80	1.5
	Y Direction	-1.32				
30 Degree	X Direction	70.31	79.76	65.30	0.82	1.5
	Y Direction	37.65				
60 Degree	X Direction	40.67	77.89	65.30	0.84	1.5
	Y Direction	66.43				
90 Degree	X Direction	0.90	77.24	65.30	0.85	1.5
	Y Direction	77.23				
120 Degree	X Direction	-38.95	77.59	65.30	0.84	1.5
	Y Direction	67.1				
150 Degree	X Direction	-67.79	77.85	65.30	0.84	1.5
	Y Direction	38.27				
180 Degree	X Direction	-78.08	78.08	65.30	0.84	1.5
	Y Direction	-0.46				
210 Degree	X Direction	-67.03	77.40	65.30	0.84	1.5
	Y Direction	-38.71				
240 Degree	X Direction	-38.30	77.17	65.30	0.85	1.5
	Y Direction	-66.99				
270 Degree	X Direction	0.71	77.67	65.30	0.84	1.5
	Y Direction	-77.67				
300 Degree	X Direction	39.74	78.30	65.30	0.83	1.5
	Y Direction	-67.46				
330 Degree	X Direction	69.96	80.52	65.30	0.81	1.5
	Y Direction	-39.86				

LOAD CASE				Tanpa Mudmat Sliding Analysis 2 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	107.24	107.25	65.30	0.61	1.5
	Y Direction	-1.74				
30 Degree	X Direction	93.13	105.64	65.30	0.62	1.5
	Y Direction	49.86				
60 Degree	X Direction	54.43	104.52	65.30	0.62	1.5
	Y Direction	89.23				
90 Degree	X Direction	1.02	104.57	65.30	0.62	1.5
	Y Direction	104.57				
120 Degree	X Direction	-52.26	104.03	65.30	0.63	1.5
	Y Direction	89.95				
150 Degree	X Direction	-90.19	103.68	65.30	0.63	1.5
	Y Direction	51.13				
180 Degree	X Direction	-102.68	102.68	65.30	0.64	1.5
	Y Direction	-0.7				
210 Degree	X Direction	-87.85	101.68	65.30	0.64	1.5
	Y Direction	-51.2				
240 Degree	X Direction	-50.79	101.92	65.30	0.64	1.5
	Y Direction	-88.36				
270 Degree	X Direction	0.78	102.91	65.30	0.63	1.5
	Y Direction	-102.91				
300 Degree	X Direction	52.90	104.62	65.30	0.62	1.5
	Y Direction	-90.26				
330 Degree	X Direction	92.78	106.96	65.30	0.61	1.5
	Y Direction	-53.21				

Lampiran Tabel Sliding Stability (Tanpa Mudmat 3 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat Sliding Analysis 3 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	42.26	42.27	65.30	1.54	1.5
	Y Direction	-0.73				
30 Degree	X Direction	35.65	40.54	65.30	1.61	1.5
	Y Direction	19.31				
60 Degree	X Direction	20.73	39.96	65.30	1.63	1.5
	Y Direction	34.16				
90 Degree	X Direction	0.27	40.72	65.30	1.60	1.5
	Y Direction	40.72				
120 Degree	X Direction	-20.75	41.05	65.30	1.59	1.5
	Y Direction	35.42				
150 Degree	X Direction	-35.33	40.72	65.30	1.60	1.5
	Y Direction	20.24				
180 Degree	X Direction	-40.15	40.15	65.30	1.63	1.5
	Y Direction	0.42				
210 Degree	X Direction	-34.92	39.88	65.30	1.64	1.5
	Y Direction	-19.27				
240 Degree	X Direction	-20.31	39.72	65.30	1.64	1.5
	Y Direction	-34.13				
270 Degree	X Direction	0.17	40.24	65.30	1.62	1.5
	Y Direction	-40.24				
300 Degree	X Direction	21.28	41.89	65.30	1.56	1.5
	Y Direction	-36.08				
330 Degree	X Direction	37.40	43.09	65.30	1.52	1.5
	Y Direction	-21.4				

LOAD CASE				Tanpa Mudmat Sliding Analysis 3 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	65.83	65.84	65.30	0.99	1.5
	Y Direction	-1.03				
30 Degree	X Direction	56.38	63.98	65.30	1.02	1.5
	Y Direction	30.25				
60 Degree	X Direction	32.31	62.37	65.30	1.05	1.5
	Y Direction	53.35				
90 Degree	X Direction	0.33	62.28	65.30	1.05	1.5
	Y Direction	62.28				
120 Degree	X Direction	-31.16	62.02	65.30	1.05	1.5
	Y Direction	53.62				
150 Degree	X Direction	-53.58	61.73	65.30	1.06	1.5
	Y Direction	30.65				
180 Degree	X Direction	-61.25	61.25	65.30	1.07	1.5
	Y Direction	0.21				
210 Degree	X Direction	-52.92	60.89	65.30	1.07	1.5
	Y Direction	-30.12				
240 Degree	X Direction	-30.78	61.25	65.30	1.07	1.5
	Y Direction	-52.96				
270 Degree	X Direction	0.24	62.41	65.30	1.05	1.5
	Y Direction	-62.41				
300 Degree	X Direction	32.41	64.05	65.30	1.02	1.5
	Y Direction	-55.25				
330 Degree	X Direction	57.22	65.90	65.30	0.99	1.5
	Y Direction	-32.69				

LOAD CASE				Tanpa Mudmat Sliding Analysis 3 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	89.54	89.55	65.30	0.73	1.5
	Y Direction	-1.48				
30 Degree	X Direction	77.53	87.95	65.30	0.74	1.5
	Y Direction	41.53				
60 Degree	X Direction	44.85	85.93	65.30	0.76	1.5
	Y Direction	73.3				
90 Degree	X Direction	1.01	85.24	65.30	0.77	1.5
	Y Direction	85.23				
120 Degree	X Direction	-42.93	85.59	65.30	0.76	1.5
	Y Direction	74.05				
150 Degree	X Direction	-74.72	85.82	65.30	0.76	1.5
	Y Direction	42.22				
180 Degree	X Direction	-86.06	86.06	65.30	0.76	1.5
	Y Direction	-0.51				
210 Degree	X Direction	-73.87	85.33	65.30	0.77	1.5
	Y Direction	-42.72				
240 Degree	X Direction	-42.20	85.13	65.30	0.77	1.5
	Y Direction	-73.93				
270 Degree	X Direction	0.79	85.72	65.30	0.76	1.5
	Y Direction	-85.72				
300 Degree	X Direction	43.81	86.38	65.30	0.76	1.5
	Y Direction	-74.45				
330 Degree	X Direction	77.14	88.81	65.30	0.74	1.5
	Y Direction	-44				

LOAD CASE				Tanpa Mudmat Sliding Analysis 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	118.65	118.67	65.30	0.55	1.5
	Y Direction	-1.94				
30 Degree	X Direction	103.04	116.88	65.30	0.56	1.5
	Y Direction	55.18				
60 Degree	X Direction	60.23	115.69	65.30	0.56	1.5
	Y Direction	98.78				
90 Degree	X Direction	1.13	115.79	65.30	0.56	1.5
	Y Direction	115.78				
120 Degree	X Direction	-57.81	115.15	65.30	0.57	1.5
	Y Direction	99.59				
150 Degree	X Direction	-99.75	114.69	65.30	0.57	1.5
	Y Direction	56.6				
180 Degree	X Direction	-113.55	113.55	65.30	0.58	1.5
	Y Direction	-0.78				
210 Degree	X Direction	-97.14	112.47	65.30	0.58	1.5
	Y Direction	-56.68				
240 Degree	X Direction	-56.16	112.79	65.30	0.58	1.5
	Y Direction	-97.82				
270 Degree	X Direction	0.87	113.93	65.30	0.57	1.5
	Y Direction	-113.93				
300 Degree	X Direction	58.52	115.80	65.30	0.56	1.5
	Y Direction	-99.93				
330 Degree	X Direction	102.65	118.36	65.30	0.55	1.5
	Y Direction	-58.92				

Lampiran Tabel Sliding Stability (3 Mudmat 0 Derajat Kemiringan)

LOAD CASE				3 Mudmat Sliding Analysis 0 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	32.21	32.21	239.90	7.45	1.5
	Y Direction	-0.56				
30 Degree	X Direction	27.18	30.86	239.90	7.77	1.5
	Y Direction	14.61				
60 Degree	X Direction	15.75	30.28	239.90	7.92	1.5
	Y Direction	25.86				
90 Degree	X Direction	0.11	30.80	239.90	7.79	1.5
	Y Direction	30.8				
120 Degree	X Direction	-15.91	31.20	239.90	7.69	1.5
	Y Direction	26.84				
150 Degree	X Direction	-27.09	31.16	239.90	7.70	1.5
	Y Direction	15.39				
180 Degree	X Direction	-30.78	30.78	239.90	7.79	1.5
	Y Direction	0.35				
210 Degree	X Direction	-26.68	30.40	239.90	7.89	1.5
	Y Direction	-14.58				
240 Degree	X Direction	-15.45	30.09	239.90	7.97	1.5
	Y Direction	-25.82				
270 Degree	X Direction	0.08	30.47	239.90	7.87	1.5
	Y Direction	-30.47				
300 Degree	X Direction	16.26	31.76	239.90	7.55	1.5
	Y Direction	-27.28				
330 Degree	X Direction	28.49	32.76	239.90	7.32	1.5
	Y Direction	-16.18				

LOAD CASE				3 Mudmat Sliding Analysis 0 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	48.13	48.14	239.90	4.98	1.5
	Y Direction	-0.77				
30 Degree	X Direction	41.18	46.69	239.90	5.14	1.5
	Y Direction	22				
60 Degree	X Direction	23.57	45.42	239.90	5.28	1.5
	Y Direction	38.83				
90 Degree	X Direction	0.15	45.37	239.90	5.29	1.5
	Y Direction	45.37				
120 Degree	X Direction	-22.94	45.37	239.90	5.29	1.5
	Y Direction	39.14				
150 Degree	X Direction	-39.42	45.35	239.90	5.29	1.5
	Y Direction	22.42				
180 Degree	X Direction	-45.04	45.04	239.90	5.33	1.5
	Y Direction	0.21				
210 Degree	X Direction	-38.85	44.60	239.90	5.38	1.5
	Y Direction	-21.91				
240 Degree	X Direction	-22.52	44.65	239.90	5.37	1.5
	Y Direction	-38.55				
270 Degree	X Direction	0.24	45.45	239.90	5.28	1.5
	Y Direction	-45.45				
300 Degree	X Direction	23.79	46.75	239.90	5.13	1.5
	Y Direction	-40.24				
330 Degree	X Direction	41.88	48.18	239.90	4.98	1.5
	Y Direction	-23.81				

LOAD CASE				3 Mudmat Sliding Analysis 0 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	64.16	64.17	239.90	3.74	1.5
	Y Direction	-1.07				
30 Degree	X Direction	55.48	62.90	239.90	3.81	1.5
	Y Direction	29.63				
60 Degree	X Direction	32.05	61.35	239.90	3.91	1.5
	Y Direction	52.31				
90 Degree	X Direction	0.60	60.87	239.90	3.94	1.5
	Y Direction	60.87				
120 Degree	X Direction	-30.90	61.31	239.90	3.91	1.5
	Y Direction	52.95				
150 Degree	X Direction	-53.70	61.63	239.90	3.89	1.5
	Y Direction	30.25				
180 Degree	X Direction	-61.81	61.81	239.90	3.88	1.5
	Y Direction	-0.28				
210 Degree	X Direction	-53.00	61.11	239.90	3.93	1.5
	Y Direction	-30.43				
240 Degree	X Direction	-30.24	60.78	239.90	3.95	1.5
	Y Direction	-52.72				
270 Degree	X Direction	0.61	61.20	239.90	3.92	1.5
	Y Direction	-61.2				
300 Degree	X Direction	31.49	61.84	239.90	3.88	1.5
	Y Direction	-53.22				
330 Degree	X Direction	55.34	63.65	239.90	3.77	1.5
	Y Direction	-31.45				

LOAD CASE				3 Mudmat Sliding Analysis 0 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	83.83	83.84	239.90	2.86	1.5
	Y Direction	-1.38				
30 Degree	X Direction	72.72	82.45	239.90	2.91	1.5
	Y Direction	38.85				
60 Degree	X Direction	42.44	81.46	239.90	2.95	1.5
	Y Direction	69.53				
90 Degree	X Direction	0.69	81.53	239.90	2.94	1.5
	Y Direction	81.53				
120 Degree	X Direction	-40.96	81.29	239.90	2.95	1.5
	Y Direction	70.22				
150 Degree	X Direction	-70.63	81.16	239.90	2.96	1.5
	Y Direction	39.97				
180 Degree	X Direction	-80.39	80.39	239.90	2.98	1.5
	Y Direction	-0.45				
210 Degree	X Direction	-68.74	79.46	239.90	3.02	1.5
	Y Direction	-39.86				
240 Degree	X Direction	-39.68	79.48	239.90	3.02	1.5
	Y Direction	-68.87				
270 Degree	X Direction	0.67	80.27	239.90	2.99	1.5
	Y Direction	-80.27				
300 Degree	X Direction	41.43	81.72	239.90	2.94	1.5
	Y Direction	-70.44				
330 Degree	X Direction	72.58	83.62	239.90	2.87	1.5
	Y Direction	-41.53				

Lampiran Tabel Sliding Stability (3 Mudmat 1 Derajat Kemiringan)

LOAD CASE				3 Mudmat Sliding Analysis 1 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	35.89	35.90	239.90	6.68	1.5
	Y Direction	-0.65				
30 Degree	X Direction	30.25	34.35	239.90	6.98	1.5
	Y Direction	16.28				
60 Degree	X Direction	17.53	33.76	239.90	7.11	1.5
	Y Direction	28.85				
90 Degree	X Direction	0.12	34.41	239.90	6.97	1.5
	Y Direction	34.41				
120 Degree	X Direction	-17.72	34.84	239.90	6.89	1.5
	Y Direction	30				
150 Degree	X Direction	-30.14	34.70	239.90	6.91	1.5
	Y Direction	17.2				
180 Degree	X Direction	-34.23	34.23	239.90	7.01	1.5
	Y Direction	0.41				
210 Degree	X Direction	-29.68	33.84	239.90	7.09	1.5
	Y Direction	-16.25				
240 Degree	X Direction	-17.19	33.56	239.90	7.15	1.5
	Y Direction	-28.82				
270 Degree	X Direction	0.10	34.03	239.90	7.05	1.5
	Y Direction	-34.03				
300 Degree	X Direction	18.14	35.50	239.90	6.76	1.5
	Y Direction	-30.52				
330 Degree	X Direction	31.78	36.58	239.90	6.56	1.5
	Y Direction	-18.12				

LOAD CASE				3 Mudmat Sliding Analysis 1 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	54.50	54.51	239.90	4.40	1.5
	Y Direction	-0.9				
30 Degree	X Direction	46.61	52.85	239.90	4.54	1.5
	Y Direction	24.92				
60 Degree	X Direction	26.67	51.45	239.90	4.66	1.5
	Y Direction	44				
90 Degree	X Direction	0.17	51.44	239.90	4.66	1.5
	Y Direction	51.44				
120 Degree	X Direction	-25.94	51.40	239.90	4.67	1.5
	Y Direction	44.37				
150 Degree	X Direction	-44.55	51.29	239.90	4.68	1.5
	Y Direction	25.41				
180 Degree	X Direction	-50.89	50.89	239.90	4.71	1.5
	Y Direction	0.25				
210 Degree	X Direction	-43.88	50.41	239.90	4.76	1.5
	Y Direction	-24.82				
240 Degree	X Direction	-25.45	50.56	239.90	4.74	1.5
	Y Direction	-43.69				
270 Degree	X Direction	0.28	51.54	239.90	4.65	1.5
	Y Direction	-51.54				
300 Degree	X Direction	26.93	53.01	239.90	4.53	1.5
	Y Direction	-45.66				
330 Degree	X Direction	47.43	54.59	239.90	4.39	1.5
	Y Direction	-27.03				

LOAD CASE				3 Mudmat Sliding Analysis 1 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	73.22	73.23	239.90	3.28	1.5
	Y Direction	-1.25				
30 Degree	X Direction	63.32	71.79	239.90	3.34	1.5
	Y Direction	33.83				
60 Degree	X Direction	36.57	70.05	239.90	3.42	1.5
	Y Direction	59.75				
90 Degree	X Direction	0.71	69.55	239.90	3.45	1.5
	Y Direction	69.55				
120 Degree	X Direction	-35.23	70.01	239.90	3.43	1.5
	Y Direction	60.5				
150 Degree	X Direction	-61.24	70.31	239.90	3.41	1.5
	Y Direction	34.55				
180 Degree	X Direction	-70.47	70.47	239.90	3.40	1.5
	Y Direction	-0.32				
210 Degree	X Direction	-60.42	69.71	239.90	3.44	1.5
	Y Direction	-34.77				
240 Degree	X Direction	-34.47	69.40	239.90	3.46	1.5
	Y Direction	-60.24				
270 Degree	X Direction	0.71	69.94	239.90	3.43	1.5
	Y Direction	-69.94				
300 Degree	X Direction	35.92	70.63	239.90	3.40	1.5
	Y Direction	-60.81				
330 Degree	X Direction	63.15	72.67	239.90	3.30	1.5
	Y Direction	-35.96				

LOAD CASE				3 Mudmat Sliding Analysis 1 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	96.21	96.22	239.90	2.49	1.5
	Y Direction	-1.62				
30 Degree	X Direction	83.46	94.63	239.90	2.54	1.5
	Y Direction	44.6				
60 Degree	X Direction	48.71	93.55	239.90	2.56	1.5
	Y Direction	79.87				
90 Degree	X Direction	0.80	93.68	239.90	2.56	1.5
	Y Direction	93.68				
120 Degree	X Direction	-46.99	93.36	239.90	2.57	1.5
	Y Direction	80.67				
150 Degree	X Direction	-81.02	93.12	239.90	2.58	1.5
	Y Direction	45.91				
180 Degree	X Direction	-92.19	92.19	239.90	2.60	1.5
	Y Direction	-0.53				
210 Degree	X Direction	-78.80	91.14	239.90	2.63	1.5
	Y Direction	-45.79				
240 Degree	X Direction	-45.49	91.26	239.90	2.63	1.5
	Y Direction	-79.11				
270 Degree	X Direction	0.78	92.21	239.90	2.60	1.5
	Y Direction	-92.21				
300 Degree	X Direction	47.53	93.86	239.90	2.56	1.5
	Y Direction	-80.93				
330 Degree	X Direction	83.29	96.00	239.90	2.50	1.5
	Y Direction	-47.74				

Lampiran Tabel Sliding Stability (3 Mudmat 2 Derajat Kemiringan)

LOAD CASE				3 Mudmat Sliding Analysis 2 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	39.31	39.32	239.90	6.10	1.5
	Y Direction	-0.74				
30 Degree	X Direction	33.10	37.60	239.90	6.38	1.5
	Y Direction	17.83				
60 Degree	X Direction	19.18	36.99	239.90	6.49	1.5
	Y Direction	31.63				
90 Degree	X Direction	0.14	37.76	239.90	6.35	1.5
	Y Direction	37.76				
120 Degree	X Direction	-19.40	38.21	239.90	6.28	1.5
	Y Direction	32.92				
150 Degree	X Direction	-32.98	38.00	239.90	6.31	1.5
	Y Direction	18.88				
180 Degree	X Direction	-37.42	37.42	239.90	6.41	1.5
	Y Direction	0.47				
210 Degree	X Direction	-32.44	37.00	239.90	6.48	1.5
	Y Direction	-17.79				
240 Degree	X Direction	-18.79	36.76	239.90	6.53	1.5
	Y Direction	-31.6				
270 Degree	X Direction	0.11	37.33	239.90	6.43	1.5
	Y Direction	-37.33				
300 Degree	X Direction	19.87	38.97	239.90	6.16	1.5
	Y Direction	-33.52				
330 Degree	X Direction	34.83	40.12	239.90	5.98	1.5
	Y Direction	-19.91				

LOAD CASE				3 Mudmat Sliding Analysis 2 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	60.39	60.40	239.90	3.97	1.5
	Y Direction	-1.01				
30 Degree	X Direction	51.64	58.57	239.90	4.10	1.5
	Y Direction	27.63				
60 Degree	X Direction	29.54	57.04	239.90	4.21	1.5
	Y Direction	48.8				
90 Degree	X Direction	0.19	57.06	239.90	4.20	1.5
	Y Direction	57.06				
120 Degree	X Direction	-28.71	56.98	239.90	4.21	1.5
	Y Direction	49.22				
150 Degree	X Direction	-49.31	56.79	239.90	4.22	1.5
	Y Direction	28.18				
180 Degree	X Direction	-56.30	56.30	239.90	4.26	1.5
	Y Direction	0.28				
210 Degree	X Direction	-48.55	55.80	239.90	4.30	1.5
	Y Direction	-27.51				
240 Degree	X Direction	-28.17	56.04	239.90	4.28	1.5
	Y Direction	-48.45				
270 Degree	X Direction	0.32	57.17	239.90	4.20	1.5
	Y Direction	-57.17				
300 Degree	X Direction	29.83	58.81	239.90	4.08	1.5
	Y Direction	-50.68				
330 Degree	X Direction	52.56	60.52	239.90	3.96	1.5
	Y Direction	-30.01				

LOAD CASE				3 Mudmat Sliding Analysis 2 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	81.61	81.62	239.90	2.94	1.5
	Y Direction	-1.42				
30 Degree	X Direction	70.57	80.02	239.90	3.00	1.5
	Y Direction	37.72				
60 Degree	X Direction	40.76	78.13	239.90	3.07	1.5
	Y Direction	66.65				
90 Degree	X Direction	0.80	77.59	239.90	3.09	1.5
	Y Direction	77.59				
120 Degree	X Direction	-39.24	78.08	239.90	3.07	1.5
	Y Direction	67.5				
150 Degree	X Direction	-68.22	78.35	239.90	3.06	1.5
	Y Direction	38.54				
180 Degree	X Direction	-78.50	78.50	239.90	3.06	1.5
	Y Direction	-0.37				
210 Degree	X Direction	-67.29	77.66	239.90	3.09	1.5
	Y Direction	-38.78				
240 Degree	X Direction	-38.39	77.40	239.90	3.10	1.5
	Y Direction	-67.21				
270 Degree	X Direction	0.81	78.02	239.90	3.07	1.5
	Y Direction	-78.02				
300 Degree	X Direction	40.03	78.78	239.90	3.05	1.5
	Y Direction	-67.85				
330 Degree	X Direction	70.38	81.02	239.90	2.96	1.5
	Y Direction	-40.13				

LOAD CASE				3 Mudmat Sliding Analysis 2 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	107.66	107.68	239.90	2.23	1.5
	Y Direction	-1.83				
30 Degree	X Direction	93.40	105.91	239.90	2.27	1.5
	Y Direction	49.93				
60 Degree	X Direction	54.52	104.76	239.90	2.29	1.5
	Y Direction	89.45				
90 Degree	X Direction	0.91	104.93	239.90	2.29	1.5
	Y Direction	104.93				
120 Degree	X Direction	-52.56	104.53	239.90	2.29	1.5
	Y Direction	90.36				
150 Degree	X Direction	-90.63	104.20	239.90	2.30	1.5
	Y Direction	51.41				
180 Degree	X Direction	-103.11	103.11	239.90	2.33	1.5
	Y Direction	-0.6				
210 Degree	X Direction	-88.12	101.95	239.90	2.35	1.5
	Y Direction	-51.27				
240 Degree	X Direction	-50.88	102.16	239.90	2.35	1.5
	Y Direction	-88.59				
270 Degree	X Direction	0.88	103.27	239.90	2.32	1.5
	Y Direction	-103.27				
300 Degree	X Direction	53.19	105.10	239.90	2.28	1.5
	Y Direction	-90.65				
330 Degree	X Direction	93.21	107.46	239.90	2.23	1.5
	Y Direction	-53.48				

Lampiran Tabel Sliding Stability (3 Mudmat 3 Derajat Kemiringan)

LOAD CASE H=3 ft |T=2.97 s				3 Mudmat Sliding Analysis 3 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Total Lateral Force (kips)	Sliding Resistance (kips)	Factor of Safety	Min SF
0 Degree	X Direction	42.72	42.73	239.90	5.61	1.5
	Y Direction	-0.83				
30 Degree	X Direction	35.94	40.83	239.90	5.88	1.5
	Y Direction	19.38				
60 Degree	X Direction	20.83	40.22	239.90	5.97	1.5
	Y Direction	34.4				
90 Degree	X Direction	0.16	41.11	239.90	5.84	1.5
	Y Direction	41.11				
120 Degree	X Direction	-21.07	41.58	239.90	5.77	1.5
	Y Direction	35.85				
150 Degree	X Direction	-35.81	41.29	239.90	5.81	1.5
	Y Direction	20.55				
180 Degree	X Direction	-40.61	40.61	239.90	5.91	1.5
	Y Direction	0.52				
210 Degree	X Direction	-35.21	40.17	239.90	5.97	1.5
	Y Direction	-19.34				
240 Degree	X Direction	-20.40	39.98	239.90	6.00	1.5
	Y Direction	-34.38				
270 Degree	X Direction	0.12	40.63	239.90	5.90	1.5
	Y Direction	-40.63				
300 Degree	X Direction	21.60	42.42	239.90	5.66	1.5
	Y Direction	-36.51				
330 Degree	X Direction	37.88	43.66	239.90	5.49	1.5
	Y Direction	-21.71				

LOAD CASE H=6 ft |T=4.36 s				3 Mudmat Sliding Analysis 3 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Total Lateral Force (kips)	Sliding Resistance (kips)	Factor of Safety	Min SF
0 Degree	X Direction	66.29	66.30	239.90	3.62	1.5
	Y Direction	-1.13				
30 Degree	X Direction	56.67	64.28	239.90	3.73	1.5
	Y Direction	30.33				
60 Degree	X Direction	32.41	62.63	239.90	3.83	1.5
	Y Direction	53.59				
90 Degree	X Direction	0.22	62.67	239.90	3.83	1.5
	Y Direction	62.67				
120 Degree	X Direction	-31.48	62.56	239.90	3.83	1.5
	Y Direction	54.06				
150 Degree	X Direction	-54.06	62.29	239.90	3.85	1.5
	Y Direction	30.95				
180 Degree	X Direction	-61.71	61.71	239.90	3.89	1.5
	Y Direction	0.32				
210 Degree	X Direction	-53.21	61.18	239.90	3.92	1.5
	Y Direction	-30.19				
240 Degree	X Direction	-30.88	61.52	239.90	3.90	1.5
	Y Direction	-53.21				
270 Degree	X Direction	0.36	62.80	239.90	3.82	1.5
	Y Direction	-62.8				
300 Degree	X Direction	32.74	64.60	239.90	3.71	1.5
	Y Direction	-55.69				
330 Degree	X Direction	57.70	66.47	239.90	3.61	1.5
	Y Direction	-33				

LOAD CASE				3 Mudmat Sliding Analysis 3 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	90.00	90.01	239.90	2.67	1.5
	Y Direction	-1.58				
30 Degree	X Direction	77.82	88.25	239.90	2.72	1.5
	Y Direction	41.61				
60 Degree	X Direction	44.95	86.19	239.90	2.78	1.5
	Y Direction	73.54				
90 Degree	X Direction	0.89	85.62	239.90	2.80	1.5
	Y Direction	85.62				
120 Degree	X Direction	-43.25	86.14	239.90	2.79	1.5
	Y Direction	74.49				
150 Degree	X Direction	-75.20	86.39	239.90	2.78	1.5
	Y Direction	42.53				
180 Degree	X Direction	-86.52	86.52	239.90	2.77	1.5
	Y Direction	-0.41				
210 Degree	X Direction	-74.16	85.62	239.90	2.80	1.5
	Y Direction	-42.8				
240 Degree	X Direction	-42.30	85.38	239.90	2.81	1.5
	Y Direction	-74.17				
270 Degree	X Direction	0.90	86.11	239.90	2.79	1.5
	Y Direction	-86.11				
300 Degree	X Direction	44.13	86.92	239.90	2.76	1.5
	Y Direction	-74.88				
330 Degree	X Direction	77.61	89.36	239.90	2.68	1.5
	Y Direction	-44.3				

LOAD CASE				3 Mudmat Sliding Analysis 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	119.12	119.14	239.90	2.01	1.5
	Y Direction	-2.05				
30 Degree	X Direction	103.34	117.18	239.90	2.05	1.5
	Y Direction	55.25				
60 Degree	X Direction	60.33	115.96	239.90	2.07	1.5
	Y Direction	99.03				
90 Degree	X Direction	1.01	116.18	239.90	2.06	1.5
	Y Direction	116.18				
120 Degree	X Direction	-58.14	115.71	239.90	2.07	1.5
	Y Direction	100.04				
150 Degree	X Direction	-100.25	115.28	239.90	2.08	1.5
	Y Direction	56.92				
180 Degree	X Direction	-114.03	114.03	239.90	2.10	1.5
	Y Direction	-0.67				
210 Degree	X Direction	-97.44	112.77	239.90	2.13	1.5
	Y Direction	-56.76				
240 Degree	X Direction	-56.26	113.06	239.90	2.12	1.5
	Y Direction	-98.07				
270 Degree	X Direction	0.99	114.33	239.90	2.10	1.5
	Y Direction	-114.33				
300 Degree	X Direction	58.84	116.35	239.90	2.06	1.5
	Y Direction	-100.37				
330 Degree	X Direction	103.12	118.92	239.90	2.02	1.5
	Y Direction	-59.23				

Lampiran Tabel Sliding Stability (Full Mudmat 0 Derajat Kemiringan)

LOAD CASE				Full Mudmat Sliding Analysis 0 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	32.28	32.28	287.42	8.90	1.5
	Y Direction	-0.55				
30 Degree	X Direction	27.25	30.92	287.42	9.29	1.5
	Y Direction	14.62				
60 Degree	X Direction	15.78	30.29	287.42	9.49	1.5
	Y Direction	25.85				
90 Degree	X Direction	0.12	30.77	287.42	9.34	1.5
	Y Direction	30.77				
120 Degree	X Direction	-15.93	31.19	287.42	9.21	1.5
	Y Direction	26.82				
150 Degree	X Direction	-27.14	31.20	287.42	9.21	1.5
	Y Direction	15.39				
180 Degree	X Direction	-30.85	30.85	287.42	9.32	1.5
	Y Direction	0.34				
210 Degree	X Direction	-26.75	30.47	287.42	9.43	1.5
	Y Direction	-14.59				
240 Degree	X Direction	-15.48	30.10	287.42	9.55	1.5
	Y Direction	-25.82				
270 Degree	X Direction	0.07	30.45	287.42	9.44	1.5
	Y Direction	-30.45				
300 Degree	X Direction	16.28	31.75	287.42	9.05	1.5
	Y Direction	-27.26				
330 Degree	X Direction	28.54	32.80	287.42	8.76	1.5
	Y Direction	-16.17				

LOAD CASE				Full Mudmat Sliding Analysis 0 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	48.20	48.21	287.42	5.96	1.5
	Y Direction	-0.76				
30 Degree	X Direction	41.25	46.76	287.42	6.15	1.5
	Y Direction	22.02				
60 Degree	X Direction	23.61	45.44	287.42	6.33	1.5
	Y Direction	38.82				
90 Degree	X Direction	0.16	45.34	287.42	6.34	1.5
	Y Direction	45.34				
120 Degree	X Direction	-22.96	45.36	287.42	6.34	1.5
	Y Direction	39.12				
150 Degree	X Direction	-39.47	45.39	287.42	6.33	1.5
	Y Direction	22.42				
180 Degree	X Direction	-45.11	45.11	287.42	6.37	1.5
	Y Direction	0.2				
210 Degree	X Direction	-38.92	44.67	287.42	6.43	1.5
	Y Direction	-21.93				
240 Degree	X Direction	-22.56	44.67	287.42	6.43	1.5
	Y Direction	-38.55				
270 Degree	X Direction	0.23	45.43	287.42	6.33	1.5
	Y Direction	-45.43				
300 Degree	X Direction	23.81	46.74	287.42	6.15	1.5
	Y Direction	-40.22				
330 Degree	X Direction	41.93	48.21	287.42	5.96	1.5
	Y Direction	-23.8				

LOAD CASE				Full Mudmat Sliding Analysis 0 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	64.23	64.24	287.42	4.47	1.5
	Y Direction	-1.06				
30 Degree	X Direction	55.55	62.96	287.42	4.56	1.5
	Y Direction	29.64				
60 Degree	X Direction	32.08	61.35	287.42	4.68	1.5
	Y Direction	52.3				
90 Degree	X Direction	0.62	60.85	287.42	4.72	1.5
	Y Direction	60.85				
120 Degree	X Direction	-30.92	61.30	287.42	4.69	1.5
	Y Direction	52.93				
150 Degree	X Direction	-53.76	61.68	287.42	4.66	1.5
	Y Direction	30.24				
180 Degree	X Direction	-61.88	61.88	287.42	4.64	1.5
	Y Direction	-0.29				
210 Degree	X Direction	-53.07	61.18	287.42	4.70	1.5
	Y Direction	-30.44				
240 Degree	X Direction	-30.28	60.80	287.42	4.73	1.5
	Y Direction	-52.72				
270 Degree	X Direction	0.60	61.18	287.42	4.70	1.5
	Y Direction	-61.18				
300 Degree	X Direction	31.51	61.83	287.42	4.65	1.5
	Y Direction	-53.2				
330 Degree	X Direction	55.39	63.69	287.42	4.51	1.5
	Y Direction	-31.44				

LOAD CASE				Full Mudmat Sliding Analysis 0 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	83.91	83.92	287.42	3.42	1.5
	Y Direction	-1.38				
30 Degree	X Direction	72.80	82.52	287.42	3.48	1.5
	Y Direction	38.86				
60 Degree	X Direction	42.48	81.48	287.42	3.53	1.5
	Y Direction	69.53				
90 Degree	X Direction	0.70	81.50	287.42	3.53	1.5
	Y Direction	81.5				
120 Degree	X Direction	-40.98	81.29	287.42	3.54	1.5
	Y Direction	70.2				
150 Degree	X Direction	-70.69	81.20	287.42	3.54	1.5
	Y Direction	39.96				
180 Degree	X Direction	-80.47	80.47	287.42	3.57	1.5
	Y Direction	-0.46				
210 Degree	X Direction	-68.81	79.53	287.42	3.61	1.5
	Y Direction	-39.88				
240 Degree	X Direction	-39.72	79.49	287.42	3.62	1.5
	Y Direction	-68.86				
270 Degree	X Direction	0.66	80.25	287.42	3.58	1.5
	Y Direction	-80.25				
300 Degree	X Direction	41.45	81.71	287.42	3.52	1.5
	Y Direction	-70.42				
330 Degree	X Direction	72.63	83.67	287.42	3.44	1.5
	Y Direction	-41.53				

Lampiran Tabel Sliding Stability (Full Mudmat 1 Derajat Kemiringan)

LOAD CASE				Full Mudmat Sliding Analysis 1 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	35.98	35.99	287.42	7.99	1.5
	Y Direction	-0.64				
30 Degree	X Direction	30.33	34.43	287.42	8.35	1.5
	Y Direction	16.3				
60 Degree	X Direction	17.57	33.78	287.42	8.51	1.5
	Y Direction	28.85				
90 Degree	X Direction	0.14	34.38	287.42	8.36	1.5
	Y Direction	34.38				
120 Degree	X Direction	-17.74	34.84	287.42	8.25	1.5
	Y Direction	29.98				
150 Degree	X Direction	-30.20	34.75	287.42	8.27	1.5
	Y Direction	17.19				
180 Degree	X Direction	-34.31	34.31	287.42	8.38	1.5
	Y Direction	0.4				
210 Degree	X Direction	-29.75	33.90	287.42	8.48	1.5
	Y Direction	-16.26				
240 Degree	X Direction	-17.23	33.58	287.42	8.56	1.5
	Y Direction	-28.82				
270 Degree	X Direction	0.09	34.01	287.42	8.45	1.5
	Y Direction	-34.01				
300 Degree	X Direction	18.16	35.50	287.42	8.10	1.5
	Y Direction	-30.5				
330 Degree	X Direction	31.84	36.63	287.42	7.85	1.5
	Y Direction	-18.11				

LOAD CASE				Full Mudmat Sliding Analysis 1 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	54.58	54.59	287.42	5.27	1.5
	Y Direction	-0.89				
30 Degree	X Direction	46.69	52.93	287.42	5.43	1.5
	Y Direction	24.94				
60 Degree	X Direction	26.71	51.47	287.42	5.58	1.5
	Y Direction	44				
90 Degree	X Direction	0.18	51.41	287.42	5.59	1.5
	Y Direction	51.41				
120 Degree	X Direction	-25.96	51.39	287.42	5.59	1.5
	Y Direction	44.35				
150 Degree	X Direction	-44.61	51.34	287.42	5.60	1.5
	Y Direction	25.41				
180 Degree	X Direction	-50.97	50.97	287.42	5.64	1.5
	Y Direction	0.24				
210 Degree	X Direction	-43.96	50.49	287.42	5.69	1.5
	Y Direction	-24.83				
240 Degree	X Direction	-25.50	50.58	287.42	5.68	1.5
	Y Direction	-43.68				
270 Degree	X Direction	0.27	51.51	287.42	5.58	1.5
	Y Direction	-51.51				
300 Degree	X Direction	26.95	53.00	287.42	5.42	1.5
	Y Direction	-45.64				
330 Degree	X Direction	47.49	54.64	287.42	5.26	1.5
	Y Direction	-27.02				

LOAD CASE				Full Mudmat Sliding Analysis 1 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	73.30	73.31	287.42	3.92	1.5
	Y Direction	-1.24				
30 Degree	X Direction	63.40	71.87	287.42	4.00	1.5
	Y Direction	33.84				
60 Degree	X Direction	36.61	70.07	287.42	4.10	1.5
	Y Direction	59.75				
90 Degree	X Direction	0.72	69.52	287.42	4.13	1.5
	Y Direction	69.52				
120 Degree	X Direction	-35.25	70.00	287.42	4.11	1.5
	Y Direction	60.48				
150 Degree	X Direction	-61.30	70.36	287.42	4.08	1.5
	Y Direction	34.54				
180 Degree	X Direction	-70.56	70.56	287.42	4.07	1.5
	Y Direction	-0.33				
210 Degree	X Direction	-60.50	69.78	287.42	4.12	1.5
	Y Direction	-34.78				
240 Degree	X Direction	-34.51	69.42	287.42	4.14	1.5
	Y Direction	-60.24				
270 Degree	X Direction	0.70	69.91	287.42	4.11	1.5
	Y Direction	-69.91				
300 Degree	X Direction	35.95	70.62	287.42	4.07	1.5
	Y Direction	-60.79				
330 Degree	X Direction	63.21	72.72	287.42	3.95	1.5
	Y Direction	-35.95				

LOAD CASE				Full Mudmat Sliding Analysis 1 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	96.30	96.31	287.42	2.98	1.5
	Y Direction	-1.61				
30 Degree	X Direction	83.54	94.70	287.42	3.03	1.5
	Y Direction	44.61				
60 Degree	X Direction	48.76	93.58	287.42	3.07	1.5
	Y Direction	79.87				
90 Degree	X Direction	0.81	93.65	287.42	3.07	1.5
	Y Direction	93.65				
120 Degree	X Direction	-47.01	93.35	287.42	3.08	1.5
	Y Direction	80.65				
150 Degree	X Direction	-81.08	93.18	287.42	3.08	1.5
	Y Direction	45.91				
180 Degree	X Direction	-92.28	92.28	287.42	3.11	1.5
	Y Direction	-0.54				
210 Degree	X Direction	-78.88	91.21	287.42	3.15	1.5
	Y Direction	-45.8				
240 Degree	X Direction	-45.54	91.27	287.42	3.15	1.5
	Y Direction	-79.1				
270 Degree	X Direction	0.77	92.18	287.42	3.12	1.5
	Y Direction	-92.18				
300 Degree	X Direction	47.56	93.85	287.42	3.06	1.5
	Y Direction	-80.91				
330 Degree	X Direction	83.35	96.05	287.42	2.99	1.5
	Y Direction	-47.73				

Lampiran Tabel Sliding Stability (Full Mudmat 2 Derajat Kemiringan)

LOAD CASE				Full Mudmat Sliding Analysis 2 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	39.41	39.42	287.42	7.29	1.5
	Y Direction	-0.73				
30 Degree	X Direction	33.19	37.69	287.42	7.63	1.5
	Y Direction	17.85				
60 Degree	X Direction	19.23	37.01	287.42	7.77	1.5
	Y Direction	31.62				
90 Degree	X Direction	0.16	37.73	287.42	7.62	1.5
	Y Direction	37.73				
120 Degree	X Direction	-19.42	38.20	287.42	7.52	1.5
	Y Direction	32.9				
150 Degree	X Direction	-33.04	38.05	287.42	7.55	1.5
	Y Direction	18.87				
180 Degree	X Direction	-37.52	37.52	287.42	7.66	1.5
	Y Direction	0.45				
210 Degree	X Direction	-32.53	37.09	287.42	7.75	1.5
	Y Direction	-17.81				
240 Degree	X Direction	-18.84	36.78	287.42	7.81	1.5
	Y Direction	-31.59				
270 Degree	X Direction	0.10	37.30	287.42	7.71	1.5
	Y Direction	-37.3				
300 Degree	X Direction	19.89	38.95	287.42	7.38	1.5
	Y Direction	-33.49				
330 Degree	X Direction	34.90	40.17	287.42	7.15	1.5
	Y Direction	-19.9				

LOAD CASE				Full Mudmat Sliding Analysis 2 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	60.49	60.50	287.42	4.75	1.5
	Y Direction	-1				
30 Degree	X Direction	51.73	58.65	287.42	4.90	1.5
	Y Direction	27.64				
60 Degree	X Direction	29.59	57.06	287.42	5.04	1.5
	Y Direction	48.79				
90 Degree	X Direction	0.21	57.02	287.42	5.04	1.5
	Y Direction	57.02				
120 Degree	X Direction	-28.73	56.97	287.42	5.05	1.5
	Y Direction	49.19				
150 Degree	X Direction	-49.37	56.84	287.42	5.06	1.5
	Y Direction	28.17				
180 Degree	X Direction	-56.40	56.40	287.42	5.10	1.5
	Y Direction	0.27				
210 Degree	X Direction	-48.64	55.89	287.42	5.14	1.5
	Y Direction	-27.52				
240 Degree	X Direction	-28.21	56.06	287.42	5.13	1.5
	Y Direction	-48.44				
270 Degree	X Direction	0.31	57.14	287.42	5.03	1.5
	Y Direction	-57.14				
300 Degree	X Direction	29.86	58.80	287.42	4.89	1.5
	Y Direction	-50.65				
330 Degree	X Direction	52.63	60.58	287.42	4.74	1.5
	Y Direction	-30				

LOAD CASE				Full Mudmat Sliding Analysis 2 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	81.71	81.72	287.42	3.52	1.5
	Y Direction	-1.4				
30 Degree	X Direction	70.66	80.11	287.42	3.59	1.5
	Y Direction	37.74				
60 Degree	X Direction	40.81	78.14	287.42	3.68	1.5
	Y Direction	66.64				
90 Degree	X Direction	0.81	77.55	287.42	3.71	1.5
	Y Direction	77.55				
120 Degree	X Direction	-39.27	78.07	287.42	3.68	1.5
	Y Direction	67.47				
150 Degree	X Direction	-68.29	78.41	287.42	3.67	1.5
	Y Direction	38.53				
180 Degree	X Direction	-78.60	78.60	287.42	3.66	1.5
	Y Direction	-0.38				
210 Degree	X Direction	-67.38	77.75	287.42	3.70	1.5
	Y Direction	-38.8				
240 Degree	X Direction	-38.43	77.41	287.42	3.71	1.5
	Y Direction	-67.2				
270 Degree	X Direction	0.80	77.99	287.42	3.69	1.5
	Y Direction	-77.99				
300 Degree	X Direction	40.05	78.76	287.42	3.65	1.5
	Y Direction	-67.82				
330 Degree	X Direction	70.45	81.07	287.42	3.55	1.5
	Y Direction	-40.12				

LOAD CASE				Full Mudmat Sliding Analysis 2 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	107.77	107.79	287.42	2.67	1.5
	Y Direction	-1.82				
30 Degree	X Direction	93.49	105.99	287.42	2.71	1.5
	Y Direction	49.94				
60 Degree	X Direction	54.57	104.78	287.42	2.74	1.5
	Y Direction	89.45				
90 Degree	X Direction	0.92	104.90	287.42	2.74	1.5
	Y Direction	104.9				
120 Degree	X Direction	-52.59	104.52	287.42	2.75	1.5
	Y Direction	90.33				
150 Degree	X Direction	-90.70	104.26	287.42	2.76	1.5
	Y Direction	51.41				
180 Degree	X Direction	-103.21	103.21	287.42	2.78	1.5
	Y Direction	-0.61				
210 Degree	X Direction	-88.21	102.04	287.42	2.82	1.5
	Y Direction	-51.29				
240 Degree	X Direction	-50.93	102.18	287.42	2.81	1.5
	Y Direction	-88.58				
270 Degree	X Direction	0.87	103.24	287.42	2.78	1.5
	Y Direction	-103.24				
300 Degree	X Direction	53.21	105.09	287.42	2.74	1.5
	Y Direction	-90.62				
330 Degree	X Direction	93.28	107.52	287.42	2.67	1.5
	Y Direction	-53.47				

Lampiran Tabel Sliding Stability (Full Mudmat 3 Derajat Kemiringan)

LOAD CASE				Full Mudmat Sliding Analysis 3 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	42.83	42.84	287.42	6.71	1.5
	Y Direction	-0.82				
30 Degree	X Direction	36.04	40.93	287.42	7.02	1.5
	Y Direction	19.4				
60 Degree	X Direction	20.89	40.24	287.42	7.14	1.5
	Y Direction	34.39				
90 Degree	X Direction	0.17	41.08	287.42	7.00	1.5
	Y Direction	41.08				
120 Degree	X Direction	-21.10	41.57	287.42	6.91	1.5
	Y Direction	35.82				
150 Degree	X Direction	-35.88	41.34	287.42	6.95	1.5
	Y Direction	20.54				
180 Degree	X Direction	-40.72	40.72	287.42	7.06	1.5
	Y Direction	0.51				
210 Degree	X Direction	-35.31	40.27	287.42	7.14	1.5
	Y Direction	-19.36				
240 Degree	X Direction	-20.46	40.00	287.42	7.19	1.5
	Y Direction	-34.37				
270 Degree	X Direction	0.11	40.60	287.42	7.08	1.5
	Y Direction	-40.6				
300 Degree	X Direction	21.63	42.41	287.42	6.78	1.5
	Y Direction	-36.48				
330 Degree	X Direction	37.95	43.72	287.42	6.57	1.5
	Y Direction	-21.7				

LOAD CASE				Full Mudmat Sliding Analysis 3 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	66.40	66.41	287.42	4.33	1.5
	Y Direction	-1.12				
30 Degree	X Direction	56.77	64.37	287.42	4.46	1.5
	Y Direction	30.35				
60 Degree	X Direction	32.46	62.65	287.42	4.59	1.5
	Y Direction	53.59				
90 Degree	X Direction	0.23	62.64	287.42	4.59	1.5
	Y Direction	62.64				
120 Degree	X Direction	-31.51	62.55	287.42	4.60	1.5
	Y Direction	54.03				
150 Degree	X Direction	-54.13	62.35	287.42	4.61	1.5
	Y Direction	30.94				
180 Degree	X Direction	-61.82	61.82	287.42	4.65	1.5
	Y Direction	0.3				
210 Degree	X Direction	-53.31	61.27	287.42	4.69	1.5
	Y Direction	-30.21				
240 Degree	X Direction	-30.93	61.54	287.42	4.67	1.5
	Y Direction	-53.2				
270 Degree	X Direction	0.34	62.76	287.42	4.58	1.5
	Y Direction	-62.76				
300 Degree	X Direction	32.76	64.59	287.42	4.45	1.5
	Y Direction	-55.66				
330 Degree	X Direction	57.78	66.53	287.42	4.32	1.5
	Y Direction	-32.99				

LOAD CASE				Full Mudmat Sliding Analysis 3 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	90.11	90.12	287.42	3.19	1.5
	Y Direction	-1.57				
30 Degree	X Direction	77.93	88.35	287.42	3.25	1.5
	Y Direction	41.63				
60 Degree	X Direction	45.01	86.22	287.42	3.33	1.5
	Y Direction	73.54				
90 Degree	X Direction	0.91	85.58	287.42	3.36	1.5
	Y Direction	85.58				
120 Degree	X Direction	-43.28	86.12	287.42	3.34	1.5
	Y Direction	74.46				
150 Degree	X Direction	-75.27	86.45	287.42	3.32	1.5
	Y Direction	42.52				
180 Degree	X Direction	-86.63	86.63	287.42	3.32	1.5
	Y Direction	-0.42				
210 Degree	X Direction	-74.26	85.72	287.42	3.35	1.5
	Y Direction	-42.82				
240 Degree	X Direction	-42.35	85.41	287.42	3.37	1.5
	Y Direction	-74.17				
270 Degree	X Direction	0.89	86.07	287.42	3.34	1.5
	Y Direction	-86.07				
300 Degree	X Direction	44.16	86.91	287.42	3.31	1.5
	Y Direction	-74.86				
330 Degree	X Direction	77.69	89.43	287.42	3.21	1.5
	Y Direction	-44.3				

LOAD CASE				Full Mudmat Sliding Analysis 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force	Total Lateral Force	Sliding Resistance	Factor of Safety	Min SF
		(kips)	(kips)	(kips)		
0 Degree	X Direction	119.23	119.25	287.42	2.41	1.5
	Y Direction	-2.04				
30 Degree	X Direction	103.45	117.29	287.42	2.45	1.5
	Y Direction	55.27				
60 Degree	X Direction	60.39	115.98	287.42	2.48	1.5
	Y Direction	99.02				
90 Degree	X Direction	1.03	116.14	287.42	2.47	1.5
	Y Direction	116.14				
120 Degree	X Direction	-58.17	115.70	287.42	2.48	1.5
	Y Direction	100.01				
150 Degree	X Direction	-100.33	115.35	287.42	2.49	1.5
	Y Direction	56.91				
180 Degree	X Direction	-114.14	114.14	287.42	2.52	1.5
	Y Direction	-0.68				
210 Degree	X Direction	-97.54	112.86	287.42	2.55	1.5
	Y Direction	-56.78				
240 Degree	X Direction	-56.32	113.08	287.42	2.54	1.5
	Y Direction	-98.06				
270 Degree	X Direction	0.97	114.29	287.42	2.51	1.5
	Y Direction	-114.29				
300 Degree	X Direction	58.87	116.33	287.42	2.47	1.5
	Y Direction	-100.34				
330 Degree	X Direction	103.20	118.98	287.42	2.42	1.5
	Y Direction	-59.22				

Lampiran

Tabulasi dan Perhitungan Bearing Capacity Semua Kemiringan

Lampiran Tabel Bearing Capacity (Tanpa Mudmat 0 Derajat Kemiringan)

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat Bearing 0 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Pc (kips)	Qd (kips)	Safety Factor
0 Degree	X Direction	83.52	-18173.2	2409.8	34281.5	14.226
	Y Direction	-1.31	1402.2			
30 Degree	X Direction	72.52	-21365.7	2409.8	34281.5	14.226
	Y Direction	38.79	-6775.1			
60 Degree	X Direction	42.37	-27951.0	2409.8	34281.5	14.226
	Y Direction	69.36	-13099.8			
90 Degree	X Direction	0.77	-95640.3	2409.8	34281.5	14.226
	Y Direction	81.25	-15482.3			
120 Degree	X Direction	-40.73	-43521.2	2409.8	34281.5	14.226
	Y Direction	69.91	-13055.5			
150 Degree	X Direction	-70.30	-50193.5	2409.8	34281.5	14.226
	Y Direction	39.76	-6802.6			
180 Degree	X Direction	-80.07	-52429.7	2409.8	34281.5	14.226
	Y Direction	-0.53	-744.3			
210 Degree	X Direction	-68.53	-49662.4	2409.8	34281.5	14.226
	Y Direction	-39.81	9829.9			
240 Degree	X Direction	-39.61	-43549.7	2409.8	34281.5	14.226
	Y Direction	-68.7	15768.8			
270 Degree	X Direction	0.59	-101300.1	2409.8	34281.5	14.226
	Y Direction	-80	17995.7			
300 Degree	X Direction	41.21	-26269.7	2409.8	34281.5	14.226
	Y Direction	-70.14	15801.3			
330 Degree	X Direction	72.26	-19844.0	2409.8	34281.5	14.226
	Y Direction	-41.33	9788.2			

Lampiran Tabel Bearing Capacity (Tanpa Mudmat 1 Derajat Kemiringan)

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat Bearing 1 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Pc (kips)	Qd (kips)	Safety Factor
0 Degree	X Direction	95.84	-20853.9	2409.8	33060.0	13.719
	Y Direction	-1.54	1648.4			
30 Degree	X Direction	83.22	-24518.1	2409.8	33060.0	13.719
	Y Direction	44.54	-7779.4			
60 Degree	X Direction	48.63	-32080.7	2409.8	33060.0	13.719
	Y Direction	79.68	-15048.9			
90 Degree	X Direction	0.90	-111787.4	2409.8	33060.0	13.719
	Y Direction	93.36	-17789.9			
120 Degree	X Direction	-46.72	-49921.7	2409.8	33060.0	13.719
	Y Direction	80.32	-14999.6			
150 Degree	X Direction	-80.62	-57561.9	2409.8	33060.0	13.719
	Y Direction	45.66	-7812.0			
180 Degree	X Direction	-91.81	-60117.1	2409.8	33060.0	13.719
	Y Direction	-0.61	-856.6			
210 Degree	X Direction	-78.57	-56938.2	2409.8	33060.0	13.719
	Y Direction	-45.72	11289.2			
240 Degree	X Direction	-45.41	-49926.6	2409.8	33060.0	13.719
	Y Direction	-78.91	18112.3			
270 Degree	X Direction	0.69	-118469.6	2409.8	33060.0	13.719
	Y Direction	-91.9	20672.5			
300 Degree	X Direction	47.28	-30139.1	2409.8	33060.0	13.719
	Y Direction	-80.59	18155.5			
330 Degree	X Direction	82.91	-22768.7	2409.8	33060.0	13.719
	Y Direction	-47.5	11249.4			

Lampiran Tabel Bearing Capacity (Tanpa Mudmat 2 Derajat Kemiringan)

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat Bearing 2 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Pc (kips)	Qd (kips)	Safety Factor
0 Degree	X Direction	107.24	-23334.4	2409.8	31838.6	13.212
	Y Direction	-1.74	1862.4			
30 Degree	X Direction	93.13	-27437.7	2409.8	31838.6	13.212
	Y Direction	49.86	-8708.6			
60 Degree	X Direction	54.43	-35906.9	2409.8	31838.6	13.212
	Y Direction	89.23	-16852.6			
90 Degree	X Direction	1.02	-126692.3	2409.8	31838.6	13.212
	Y Direction	104.57	-19926.0			
120 Degree	X Direction	-52.26	-55841.3	2409.8	31838.6	13.212
	Y Direction	89.95	-16797.9			
150 Degree	X Direction	-90.19	-64394.8	2409.8	31838.6	13.212
	Y Direction	51.13	-8747.9			
180 Degree	X Direction	-102.68	-67234.7	2409.8	31838.6	13.212
	Y Direction	-0.7	-983.0			
210 Degree	X Direction	-87.85	-63663.3	2409.8	31838.6	13.212
	Y Direction	-51.2	12642.3			
240 Degree	X Direction	-50.79	-55841.7	2409.8	31838.6	13.212
	Y Direction	-88.36	20281.4			
270 Degree	X Direction	0.78	-133922.1	2409.8	31838.6	13.212
	Y Direction	-102.91	23149.2			
300 Degree	X Direction	52.90	-33721.6	2409.8	31838.6	13.212
	Y Direction	-90.26	20334.0			
330 Degree	X Direction	92.78	-25479.2	2409.8	31838.6	13.212
	Y Direction	-53.21	12601.7			

Lampiran Tabel Bearing Capacity (Tanpa Mudmat 3 Derajat Kemiringan)

LOAD CASE H=12 ft |T=5.82 s				Tanpa Mudmat Bearing 3 Degree		
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Pc (kips)	Qd (kips)	Safety Factor
0 Degree	X Direction	118.65	-25817.1	2409.8	30617.3	12.705
	Y Direction	-1.94	2076.5			
30 Degree	X Direction	103.04	-30357.4	2409.8	30617.3	12.705
	Y Direction	55.18	-9637.8			
60 Degree	X Direction	60.23	-39733.1	2409.8	30617.3	12.705
	Y Direction	98.78	-18656.3			
90 Degree	X Direction	1.13	-140355.2	2409.8	30617.3	12.705
	Y Direction	115.78	-22062.1			
120 Degree	X Direction	-57.81	-61771.7	2409.8	30617.3	12.705
	Y Direction	99.59	-18598.2			
150 Degree	X Direction	-99.75	-71220.5	2409.8	30617.3	12.705
	Y Direction	56.6	-9683.8			
180 Degree	X Direction	-113.55	-74352.4	2409.8	30617.3	12.705
	Y Direction	-0.78	-1095.3			
210 Degree	X Direction	-97.14	-70395.6	2409.8	30617.3	12.705
	Y Direction	-56.68	13995.5			
240 Degree	X Direction	-56.16	-61745.8	2409.8	30617.3	12.705
	Y Direction	-97.82	22452.8			
270 Degree	X Direction	0.87	-149374.7	2409.8	30617.3	12.705
	Y Direction	-113.93	25628.1			
300 Degree	X Direction	58.52	-37304.2	2409.8	30617.3	12.705
	Y Direction	-99.93	22512.5			
330 Degree	X Direction	102.65	-28189.7	2409.8	30617.3	12.705
	Y Direction	-58.92	13954.0			

Lampiran Tabel Bearing Capacity (3 Mudmat 0 Derajat Kemiringan)

LOAD CASE				3 Mudmat Pressure 0 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	32.21	-7008.6	0.904	0.777	1.718	1.590	1.718	7.175	18.403
	Y Direction	-0.56	599.4							
30 Degree	X Direction	27.18	-8007.7	0.511	1.053	1.441	1.983	1.983	7.175	17.844
	Y Direction	14.61	-2551.8							
60 Degree	X Direction	15.75	-10390.1	0.125	1.163	1.331	2.369	2.369	7.175	17.255
	Y Direction	25.86	-4884.1							
90 Degree	X Direction	0.11	-13662.9	-0.169	1.078	1.417	2.664	2.664	7.175	16.920
	Y Direction	30.8	-5869							
120 Degree	X Direction	-15.91	-17000.3	-0.272	0.793	1.701	2.767	2.767	7.175	16.820
	Y Direction	26.84	-5012.3							
150 Degree	X Direction	-27.09	-19342.0	-0.155	0.404	2.090	2.650	2.650	7.175	16.934
	Y Direction	15.39	-2633.1							
180 Degree	X Direction	-30.78	-20154.7	0.129	0.025	2.469	2.365	2.469	7.175	17.132
	Y Direction	0.35	491.5							
210 Degree	X Direction	-26.68	-19334.5	0.507	-0.258	2.752	1.987	2.752	7.175	16.833
	Y Direction	-14.58	3600.1							
240 Degree	X Direction	-15.45	-16986.7	0.891	-0.369	2.863	1.604	2.863	7.175	16.732
	Y Direction	-25.82	5926.5							
270 Degree	X Direction	0.08	-13735.6	1.178	-0.278	2.773	1.316	2.773	7.175	16.814
	Y Direction	-30.47	6854.1							
300 Degree	X Direction	16.26	-10365.1	1.298	-0.007	2.502	1.196	2.502	7.175	17.094
	Y Direction	-27.28	6145.7							
330 Degree	X Direction	28.49	-7823.9	1.200	0.386	2.108	1.294	2.108	7.175	17.629
	Y Direction	-16.18	3831.9							

LOAD CASE				3 Mudmat Pressure 0 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	48.13	-10472.6	0.727	0.552	1.943	1.768	1.943	7.175	17.919
	Y Direction	-0.77	824.2							
30 Degree	X Direction	41.18	-12132.3	0.135	0.951	1.543	2.360	2.360	7.175	17.267
	Y Direction	22	-3842.5							
60 Degree	X Direction	23.57	-15548.9	-0.435	1.124	1.371	2.929	2.929	7.175	16.676
	Y Direction	38.83	-7333.7							
90 Degree	X Direction	0.15	-18631.2	-0.753	1.084	1.410	3.247	3.247	7.175	16.436
	Y Direction	45.37	-8645.3							
120 Degree	X Direction	-22.94	-24512.1	-0.952	0.601	1.893	3.447	3.447	7.175	16.308
	Y Direction	39.14	-7309.3							
150 Degree	X Direction	-39.42	-28145.5	-0.794	0.021	2.473	3.289	3.289	7.175	16.408
	Y Direction	22.42	-3835.9							
180 Degree	X Direction	-45.04	-29492.1	-0.433	-0.496	2.990	2.928	2.990	7.175	16.625
	Y Direction	0.21	294.9							
210 Degree	X Direction	-38.85	-28153.9	0.188	-0.962	3.456	2.307	3.456	7.175	16.302
	Y Direction	-21.91	5410.0							
240 Degree	X Direction	-22.52	-24759.9	0.750	-1.130	3.625	1.744	3.625	7.175	16.206
	Y Direction	-38.55	8848.4							
270 Degree	X Direction	0.24	-41206.8	-0.059	-2.231	4.725	2.553	4.725	7.175	15.744
	Y Direction	-45.45	10223.8							
300 Degree	X Direction	23.79	-15165.2	1.330	-0.596	3.091	1.164	3.091	7.175	16.548
	Y Direction	-40.24	9065.4							
330 Degree	X Direction	41.88	-11501.1	1.179	-0.020	2.514	1.316	2.514	7.175	17.080
	Y Direction	-23.81	5638.9							

LOAD CASE H=9 ft |T=5.24 s				3 Mudmat Pressure 0 Degree						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	I (kips/ft^2)	II (kips/ft^2)	III (kips/ft^2)	IV (kips/ft^2)	Max Pressure (kips/ft^2)	Bearing Cap (kips/ft^2)	Safety Factor
0 Degree	X Direction	64.16	-13960.6	0.558	0.315	2.179	1.936	2.179	7.175	17.518
	Y Direction	-1.07	1145.3							
30 Degree	X Direction	55.48	-16345.4	-0.251	0.848	1.646	2.746	2.746	7.175	16.839
	Y Direction	29.63	-5175.2							
60 Degree	X Direction	32.05	-21143.0	-1.030	1.070	1.425	3.524	3.524	7.175	16.262
	Y Direction	52.31	-9879.6							
90 Degree	X Direction	0.60	-74524.9	-4.311	-1.846	4.341	6.806	6.806	7.175	15.280
	Y Direction	60.87	-11598.9							
120 Degree	X Direction	-30.90	-33017.6	-1.720	0.381	2.113	4.214	4.214	7.175	15.929
	Y Direction	52.95	-9888.3							
150 Degree	X Direction	-53.70	-38341.3	-1.528	-0.429	2.923	4.023	4.023	7.175	16.010
	Y Direction	30.25	-5175.5							
180 Degree	X Direction	-61.81	-40473.1	-1.144	-1.060	3.555	3.638	3.638	7.175	16.198
	Y Direction	-0.28	-393.2							
210 Degree	X Direction	-53.00	-38408.1	-0.184	-1.781	4.275	2.678	4.275	7.175	15.904
	Y Direction	-30.43	7513.8							
240 Degree	X Direction	-30.24	-33247.8	0.603	-1.968	4.463	1.892	4.463	7.175	15.834
	Y Direction	-52.72	12100.9							
270 Degree	X Direction	0.61	-104734.0	-3.370	-6.295	8.789	5.864	8.789	7.175	15.042
	Y Direction	-61.2	13766.7							
300 Degree	X Direction	31.49	-20073.6	1.356	-1.192	3.686	1.139	3.686	7.175	16.172
	Y Direction	-53.22	11989.5							
330 Degree	X Direction	55.34	-15197.4	1.156	-0.426	2.921	1.338	2.921	7.175	16.683
	Y Direction	-31.45	7448.3							

LOAD CASE H=12 ft |T=5.82 s				3 Mudmat Pressure 0 Degree						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	I (kips/ft^2)	II (kips/ft^2)	III (kips/ft^2)	IV (kips/ft^2)	Max Pressure (kips/ft^2)	Bearing Cap (kips/ft^2)	Safety Factor
0 Degree	X Direction	83.83	-18240.6	0.345	0.031	2.463	2.149	2.463	7.175	17.139
	Y Direction	-1.38	1477.1							
30 Degree	X Direction	72.72	-21424.6	-0.717	0.724	1.770	3.212	3.212	7.175	16.460
	Y Direction	38.85	-6785.6							
60 Degree	X Direction	42.44	-27997.2	-1.773	1.017	1.477	4.268	4.268	7.175	15.907
	Y Direction	69.53	-13131.9							
90 Degree	X Direction	0.69	-85703.6	-5.378	-2.077	4.572	7.873	7.873	7.175	15.137
	Y Direction	81.53	-15535.7							
120 Degree	X Direction	-40.96	-43767.0	-2.687	0.100	2.395	5.181	5.181	7.175	15.611
	Y Direction	70.22	-13113.4							
150 Degree	X Direction	-70.63	-50429.1	-2.407	-0.954	3.448	4.901	4.901	7.175	15.690
	Y Direction	39.97	-6838.5							
180 Degree	X Direction	-80.39	-52639.3	-1.876	-1.741	4.236	4.370	4.370	7.175	15.868
	Y Direction	-0.45	-631.9							
210 Degree	X Direction	-68.74	-49814.6	-0.599	-2.690	5.185	3.093	5.185	7.175	15.610
	Y Direction	-39.86	9842.2							
240 Degree	X Direction	-39.68	-43626.7	0.394	-2.965	5.459	2.100	5.459	7.175	15.540
	Y Direction	-68.87	15807.8							
270 Degree	X Direction	0.67	-115035.7	-3.512	-7.349	9.843	6.006	9.843	7.175	14.955
	Y Direction	-80.27	18056.4							
300 Degree	X Direction	41.43	-26410.0	1.400	-1.972	4.466	1.094	4.466	7.175	15.833
	Y Direction	-70.44	15868.9							
330 Degree	X Direction	72.58	-19931.9	1.135	-0.955	3.449	1.359	3.449	7.175	16.306
	Y Direction	-41.53	9835.5							

Lampiran Tabel Bearing Capacity (3 Mudmat 1 Derajat Kemiringan)

LOAD CASE				3 Mudmat Pressure 1 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	35.89	-7809.3	0.868	0.720	1.774	1.627	1.774	7.175	17.763
	Y Direction	-0.65	695.7							
30 Degree	X Direction	30.25	-8912.2	0.428	1.032	1.462	2.067	2.067	7.175	17.191
	Y Direction	16.28	-2843.5							
60 Degree	X Direction	17.53	-11564.3	-0.003	1.155	1.340	2.497	2.497	7.175	16.592
	Y Direction	28.85	-5448.8							
90 Degree	X Direction	0.12	-14905.0	-0.315	1.079	1.416	2.809	2.809	7.175	16.273
	Y Direction	34.41	-6556.9							
120 Degree	X Direction	-17.72	-18934.3	-0.447	0.743	1.751	2.942	2.942	7.175	16.158
	Y Direction	30	-5602.4							
150 Degree	X Direction	-30.14	-21519.7	-0.315	0.311	2.184	2.809	2.809	7.175	16.273
	Y Direction	17.2	-2942.8							
180 Degree	X Direction	-34.23	-22413.8	0.007	-0.115	2.609	2.487	2.609	7.175	16.469
	Y Direction	0.41	575.8							
210 Degree	X Direction	-29.68	-21508.5	0.425	-0.428	2.922	2.069	2.922	7.175	16.175
	Y Direction	-16.25	4012.5							
240 Degree	X Direction	-17.19	-18899.8	0.853	-0.553	3.047	1.641	3.047	7.175	16.074
	Y Direction	-28.82	6615.1							
270 Degree	X Direction	0.10	-17169.5	1.064	-0.563	3.057	1.431	3.057	7.175	16.066
	Y Direction	-34.03	7654.9							
300 Degree	X Direction	18.14	-11563.5	1.306	-0.155	2.649	1.188	2.649	7.175	16.428
	Y Direction	-30.52	6875.6							
330 Degree	X Direction	31.78	-8727.4	1.197	0.285	2.210	1.298	2.210	7.175	16.966
	Y Direction	-18.12	4291.3							

LOAD CASE				3 Mudmat Pressure 1 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	54.50	-11858.7	0.661	0.456	2.038	1.833	2.038	7.175	17.240
	Y Direction	-0.9	963.3							
30 Degree	X Direction	46.61	-13732.1	-0.012	0.913	1.582	2.507	2.507	7.175	16.581
	Y Direction	24.92	-4352.6							
60 Degree	X Direction	26.67	-17593.9	-0.657	1.109	1.386	3.151	3.151	7.175	15.996
	Y Direction	44	-8310.1							
90 Degree	X Direction	0.17	-21115.4	-1.020	1.063	1.431	3.514	3.514	7.175	15.761
	Y Direction	51.44	-9802.0							
120 Degree	X Direction	-25.94	-27717.6	-1.242	0.519	1.976	3.736	3.736	7.175	15.639
	Y Direction	44.37	-8286.0							
150 Degree	X Direction	-44.55	-31808.3	-1.061	-0.137	2.632	3.555	3.555	7.175	15.737
	Y Direction	25.41	-4347.4							
180 Degree	X Direction	-50.89	-33322.7	-0.650	-0.724	3.219	3.144	3.219	7.175	15.948
	Y Direction	0.25	351.1							
210 Degree	X Direction	-43.88	-31799.0	0.052	-1.250	3.744	2.442	3.744	7.175	15.635
	Y Direction	-24.82	6128.6							
240 Degree	X Direction	-25.45	-27981.3	0.688	-1.442	3.937	1.806	3.937	7.175	15.542
	Y Direction	-43.69	10028.2							
270 Degree	X Direction	0.28	-48074.6	-0.312	-2.775	5.270	2.806	5.270	7.175	15.081
	Y Direction	-51.54	11593.7							
300 Degree	X Direction	26.93	-17166.8	1.344	-0.842	3.337	1.151	3.337	7.175	15.869
	Y Direction	-45.66	10286.4							
330 Degree	X Direction	47.43	-13025.2	1.171	-0.189	2.683	1.323	2.683	7.175	16.393
	Y Direction	-27.03	6401.5							

LOAD CASE H=9 ft |T=5.24 s				3 Mudmat Pressure 1 Degree						
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	73.22	-15932.0	0.465	0.180	2.314	2.030	2.314	7.175	16.820
	Y Direction	-1.25	1337.9							
30 Degree	X Direction	63.32	-18655.2	-0.463	0.792	1.702	2.958	2.958	7.175	16.145
	Y Direction	33.83	-5908.8							
60 Degree	X Direction	36.57	-24124.8	-1.352	1.046	1.449	3.847	3.847	7.175	15.584
	Y Direction	59.75	-11284.8							
90 Degree	X Direction	0.71	-88187.8	-5.280	-2.464	4.958	7.774	7.774	7.175	14.642
	Y Direction	69.55	-13252.9							
120 Degree	X Direction	-35.23	-37644.3	-2.138	0.262	2.232	4.633	4.633	7.175	15.268
	Y Direction	60.5	-11298.2							
150 Degree	X Direction	-61.24	-43724.8	-1.919	-0.663	3.157	4.413	4.413	7.175	15.345
	Y Direction	34.55	-5911.2							
180 Degree	X Direction	-70.47	-46143.7	-1.479	-1.384	3.878	3.973	3.973	7.175	15.525
	Y Direction	-0.32	-449.4							
210 Degree	X Direction	-60.42	-43785.3	-0.382	-2.207	4.701	2.877	4.701	7.175	15.245
	Y Direction	-34.77	8585.4							
240 Degree	X Direction	-34.47	-37898.5	0.516	-2.422	4.916	1.978	4.916	7.175	15.179
	Y Direction	-60.24	13827.0							
270 Degree	X Direction	0.71	-121903.5	-4.158	-7.501	9.995	6.652	9.995	7.175	14.437
	Y Direction	-69.94	15732.7							
300 Degree	X Direction	35.92	-22897.6	1.374	-1.537	4.032	1.121	4.032	7.175	15.499
	Y Direction	-60.81	13699.4							
330 Degree	X Direction	63.15	-17342.2	1.145	-0.664	3.159	1.349	3.159	7.175	15.991
	Y Direction	-35.96	8516.4							

LOAD CASE H=12 ft |T=5.82 s				3 Mudmat Pressure 1 Degree						
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	96.21	-20934.4	0.216	-0.152	2.647	2.278	2.647	7.175	16.430
	Y Direction	-1.62	1734.0							
30 Degree	X Direction	83.46	-24588.8	-1.008	0.648	1.847	3.502	3.502	7.175	15.768
	Y Direction	44.6	-7789.9							
60 Degree	X Direction	48.71	-32133.4	-2.221	0.985	1.510	4.715	4.715	7.175	15.241
	Y Direction	79.87	-15084.8							
90 Degree	X Direction	0.80	-99366.5	-6.417	-2.624	5.119	8.912	8.912	7.175	14.524
	Y Direction	93.68	-17850.9							
120 Degree	X Direction	-46.99	-50210.2	-3.268	-0.067	2.561	5.762	5.762	7.175	14.964
	Y Direction	80.67	-15064.9							
150 Degree	X Direction	-81.02	-57847.5	-2.945	-1.276	3.771	5.440	5.440	7.175	15.038
	Y Direction	45.91	-7854.8							
180 Degree	X Direction	-92.19	-60365.9	-2.336	-2.178	4.672	4.830	4.830	7.175	15.204
	Y Direction	-0.53	-744.3							
210 Degree	X Direction	-78.80	-57104.9	-0.866	-3.269	5.763	3.361	5.763	7.175	14.964
	Y Direction	-45.79	11306.5							
240 Degree	X Direction	-45.49	-50014.6	0.273	-3.585	6.080	2.221	6.080	7.175	14.899
	Y Direction	-79.11	18158.2							
270 Degree	X Direction	0.78	-133922.1	-4.323	-8.730	11.225	6.817	11.225	7.175	14.358
	Y Direction	-92.21	20742.3							
300 Degree	X Direction	47.53	-30298.5	1.425	-2.449	4.943	1.069	4.943	7.175	15.171
	Y Direction	-80.93	18232.1							
330 Degree	X Direction	83.29	-22873.0	1.121	-1.282	3.776	1.374	3.776	7.175	15.619
	Y Direction	-47.74	11306.2							

Lampiran Tabel Bearing Capacity (3 Mudmat 2 Derajat Kemiringan)

LOAD CASE				3 Mudmat Pressure 2 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	39.31	-8553.5	0.835	0.667	1.828	1.660	1.828	7.175	17.137
	Y Direction	-0.74	792.1							
30 Degree	X Direction	33.10	-9751.8	0.350	1.012	1.482	2.144	2.144	7.175	16.558
	Y Direction	17.83	-3114.2							
60 Degree	X Direction	19.18	-12652.8	-0.122	1.147	1.347	2.616	2.616	7.175	15.954
	Y Direction	31.63	-5973.9							
90 Degree	X Direction	0.14	-17389.1	-0.527	1.002	1.492	3.021	3.021	7.175	15.587
	Y Direction	37.76	-7195.2							
120 Degree	X Direction	-19.40	-20729.5	-0.609	0.697	1.797	3.104	3.104	7.175	15.524
	Y Direction	32.92	-6147.7							
150 Degree	X Direction	-32.98	-23547.4	-0.463	0.224	2.271	2.957	2.957	7.175	15.638
	Y Direction	18.88	-3230.2							
180 Degree	X Direction	-37.42	-24502.6	-0.105	-0.245	2.740	2.599	2.740	7.175	15.831
	Y Direction	0.47	660.0							
210 Degree	X Direction	-32.44	-23508.7	0.349	-0.584	3.079	2.145	3.079	7.175	15.543
	Y Direction	-17.79	4392.7							
240 Degree	X Direction	-18.79	-20658.9	0.819	-0.723	3.217	1.676	3.217	7.175	15.442
	Y Direction	-31.6	7253.2							
270 Degree	X Direction	0.11	-18886.5	1.043	-0.741	3.236	1.451	3.236	7.175	15.430
	Y Direction	-37.33	8397.2							
300 Degree	X Direction	19.87	-12666.3	1.314	-0.290	2.785	1.180	2.785	7.175	15.789
	Y Direction	-33.52	7551.5							
330 Degree	X Direction	34.83	-9565.0	1.193	0.191	2.303	1.301	2.303	7.175	16.327
	Y Direction	-19.91	4715.3							

LOAD CASE				3 Mudmat Pressure 2 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	60.39	-13140.3	0.599	0.370	2.125	1.895	2.125	7.175	16.589
	Y Direction	-1.01	1081.1							
30 Degree	X Direction	51.64	-15214.0	-0.149	0.877	1.618	2.643	2.643	7.175	15.927
	Y Direction	27.63	-4825.9							
60 Degree	X Direction	29.54	-19487.2	-0.863	1.095	1.399	3.358	3.358	7.175	15.349
	Y Direction	48.8	-9216.7							
90 Degree	X Direction	0.19	-23599.6	-1.278	1.032	1.462	3.772	3.772	7.175	15.114
	Y Direction	57.06	-10872.9							
120 Degree	X Direction	-28.71	-30677.5	-1.510	0.443	2.051	4.005	4.005	7.175	15.004
	Y Direction	49.22	-9191.7							
150 Degree	X Direction	-49.31	-35206.9	-1.309	-0.284	2.779	3.803	3.803	7.175	15.099
	Y Direction	28.18	-4821.4							
180 Degree	X Direction	-56.30	-36865.2	-0.851	-0.935	3.429	3.345	3.429	7.175	15.305
	Y Direction	0.28	393.2							
210 Degree	X Direction	-48.55	-35183.3	-0.073	-1.517	4.011	2.568	4.011	7.175	15.001
	Y Direction	-27.51	6792.8							
240 Degree	X Direction	-28.17	-30971.9	0.631	-1.732	4.227	1.864	4.227	7.175	14.910
	Y Direction	-48.45	11120.8							
270 Degree	X Direction	0.32	-54942.4	-0.576	-3.308	5.803	3.070	5.803	7.175	14.449
	Y Direction	-57.17	12860.2							
300 Degree	X Direction	29.83	-19015.4	1.356	-1.070	3.564	1.138	3.564	7.175	15.225
	Y Direction	-50.68	11417.3							
330 Degree	X Direction	52.56	-14434.0	1.164	-0.346	2.840	1.330	2.840	7.175	15.738
	Y Direction	-30.01	7107.3							

LOAD CASE				3 Mudmat Pressure 2 Degree						
H=9 ft |T=5.24 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	81.61	-17757.6	0.378	0.055	2.439	2.117	2.439	7.175	16.153
	Y Direction	-1.42	1519.9							
30 Degree	X Direction	70.57	-20791.1	-0.660	0.740	1.754	3.154	3.154	7.175	15.487
	Y Direction	37.72	-6588.2							
60 Degree	X Direction	40.76	-26888.9	-1.651	1.024	1.471	4.145	4.145	7.175	14.943
	Y Direction	66.65	-12588.0							
90 Degree	X Direction	0.80	-99366.5	-6.092	-2.950	5.444	8.586	8.586	7.175	14.048
	Y Direction	77.59	-14784.9							
120 Degree	X Direction	-39.24	-41929.1	-2.526	0.153	2.342	5.020	5.020	7.175	14.641
	Y Direction	67.5	-12605.4							
150 Degree	X Direction	-68.22	-48708.4	-2.281	-0.880	3.374	4.775	4.775	7.175	14.715
	Y Direction	38.54	-6593.9							
180 Degree	X Direction	-78.50	-51401.7	-1.792	-1.681	4.176	4.286	4.286	7.175	14.886
	Y Direction	-0.37	-519.6							
210 Degree	X Direction	-67.29	-48763.8	-0.566	-2.601	5.095	3.060	5.095	7.175	14.620
	Y Direction	-38.78	9575.6							
240 Degree	X Direction	-38.39	-42208.4	0.436	-2.842	5.336	2.058	5.336	7.175	14.557
	Y Direction	-67.21	15426.8							
270 Degree	X Direction	0.81	-139073.0	-4.961	-8.690	11.185	7.455	11.185	7.175	13.854
	Y Direction	-78.02	17550.3							
300 Degree	X Direction	40.03	-25517.5	1.390	-1.858	4.352	1.104	4.352	7.175	14.861
	Y Direction	-67.85	15285.4							
330 Degree	X Direction	70.38	-19327.7	1.135	-0.884	3.379	1.359	3.379	7.175	15.336
	Y Direction	-40.13	9504.0							

LOAD CASE				3 Mudmat Pressure 2 Degree						
H=12 ft |T=5.82 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	107.66	-23425.8	0.095	-0.321	2.815	2.399	2.815	7.175	15.761
	Y Direction	-1.83	1958.8							
30 Degree	X Direction	93.40	-27517.3	-1.277	0.576	1.918	3.771	3.771	7.175	15.115
	Y Direction	49.93	-8720.8							
60 Degree	X Direction	54.52	-35966.2	-2.635	0.954	1.540	5.130	5.130	7.175	14.611
	Y Direction	89.45	-16894.2							
90 Degree	X Direction	0.91	-113029.4	-7.438	-3.190	5.684	9.933	9.933	7.175	13.934
	Y Direction	104.93	-19994.6							
120 Degree	X Direction	-52.56	-56161.9	-3.806	-0.220	2.714	6.300	6.300	7.175	14.351
	Y Direction	90.36	-16874.5							
150 Degree	X Direction	-90.63	-64709.0	-3.444	-1.575	4.069	5.938	5.938	7.175	14.420
	Y Direction	51.41	-8795.8							
180 Degree	X Direction	-103.11	-67516.3	-2.761	-2.582	5.077	5.256	5.256	7.175	14.577
	Y Direction	-0.6	-842.6							
210 Degree	X Direction	-88.12	-63858.9	-1.115	-3.805	6.299	3.609	6.299	7.175	14.351
	Y Direction	-51.27	12659.6							
240 Degree	X Direction	-50.88	-55940.7	0.160	-4.160	6.655	2.334	6.655	7.175	14.290
	Y Direction	-88.59	20334.2							
270 Degree	X Direction	0.88	-151091.6	-5.055	-9.991	12.486	7.550	12.486	7.175	13.787
	Y Direction	-103.27	23230.2							
300 Degree	X Direction	53.19	-33906.5	1.449	-2.891	5.385	1.046	5.385	7.175	14.544
	Y Direction	-90.65	20421.8							
330 Degree	X Direction	93.21	-25597.3	1.107	-1.584	4.079	1.387	4.079	7.175	14.971
	Y Direction	-53.48	12665.6							

Lampiran Tabel Bearing Capacity (3 Mudmat 3 Derajat Kemiringan)

LOAD CASE				3 Mudmat Pressure 3 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	42.72	-9295.5	0.802	0.613	1.881	1.692	1.881	7.175	16.519
	Y Direction	-0.83	888.4							
30 Degree	X Direction	35.94	-10588.5	0.273	0.992	1.502	2.221	2.221	7.175	15.935
	Y Direction	19.38	-3384.9							
60 Degree	X Direction	20.83	-13741.3	-0.241	1.140	1.355	2.735	2.735	7.175	15.328
	Y Direction	34.4	-6497.0							
90 Degree	X Direction	0.16	-19873.3	-0.739	0.926	1.569	3.233	3.233	7.175	14.924
	Y Direction	41.11	-7833.6							
120 Degree	X Direction	-21.07	-22513.9	-0.771	0.652	1.843	3.265	3.265	7.175	14.902
	Y Direction	35.85	-6694.9							
150 Degree	X Direction	-35.81	-25568.0	-0.611	0.137	2.358	3.105	3.105	7.175	15.016
	Y Direction	20.55	-3515.9							
180 Degree	X Direction	-40.61	-26591.4	-0.219	-0.374	2.868	2.713	2.868	7.175	15.207
	Y Direction	0.52	730.2							
210 Degree	X Direction	-35.21	-25516.0	0.273	-0.741	3.236	2.221	3.236	7.175	14.923
	Y Direction	-19.34	4775.4							
240 Degree	X Direction	-20.40	-22429.0	0.784	-0.893	3.388	1.711	3.388	7.175	14.823
	Y Direction	-34.38	7891.3							
270 Degree	X Direction	0.12	-20603.4	1.022	-0.920	3.414	1.472	3.414	7.175	14.807
	Y Direction	-40.63	9139.5							
300 Degree	X Direction	21.60	-13769.1	1.322	-0.426	2.920	1.173	2.920	7.175	15.162
	Y Direction	-36.51	8225.1							
330 Degree	X Direction	37.88	-10402.6	1.190	0.097	2.397	1.305	2.397	7.175	15.698
	Y Direction	-21.71	5141.6							

LOAD CASE				3 Mudmat Pressure 3 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	66.29	-14424.1	0.538	0.281	2.213	1.956	2.213	7.175	15.947
	Y Direction	-1.13	1209.5							
30 Degree	X Direction	56.67	-16696.0	-0.285	0.841	1.654	2.779	2.779	7.175	15.287
	Y Direction	30.33	-5297.5							
60 Degree	X Direction	32.41	-21380.5	-1.069	1.081	1.413	3.564	3.564	7.175	14.718
	Y Direction	53.59	-10121.4							
90 Degree	X Direction	0.22	-27325.8	-1.608	0.930	1.565	4.102	4.102	7.175	14.454
	Y Direction	62.67	-11941.9							
120 Degree	X Direction	-31.48	-33637.3	-1.778	0.367	2.127	4.272	4.272	7.175	14.384
	Y Direction	54.06	-10095.6							
150 Degree	X Direction	-54.06	-38598.3	-1.556	-0.431	2.925	4.050	4.050	7.175	14.477
	Y Direction	30.95	-5295.3							
180 Degree	X Direction	-61.71	-40407.6	-1.051	-1.146	3.641	3.545	3.641	7.175	14.676
	Y Direction	0.32	449.4							
210 Degree	X Direction	-53.21	-38560.3	-0.199	-1.783	4.278	2.694	4.278	7.175	14.382
	Y Direction	-30.19	7454.5							
240 Degree	X Direction	-30.88	-33951.4	0.574	-2.021	4.516	1.920	4.516	7.175	14.294
	Y Direction	-53.21	12213.4							
270 Degree	X Direction	0.36	-61810.2	-0.840	-3.842	6.336	3.334	6.336	7.175	13.837
	Y Direction	-62.8	14126.6							
300 Degree	X Direction	32.74	-20870.4	1.369	-1.297	3.792	1.126	3.792	7.175	14.597
	Y Direction	-55.69	12546.0							
330 Degree	X Direction	57.70	-15845.5	1.158	-0.503	2.997	1.337	2.997	7.175	15.099
	Y Direction	-33	7815.4							

LOAD CASE				3 Mudmat Pressure 3 Degree						
H=9 ft |T=5.24 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	90.00	-19583.2	0.290	-0.069	2.564	2.204	2.564	7.175	15.504
	Y Direction	-1.58	1691.2							
30 Degree	X Direction	77.82	-22927.1	-0.856	0.688	1.806	3.350	3.350	7.175	14.847
	Y Direction	41.61	-7267.7							
60 Degree	X Direction	44.95	-29653.0	-1.950	1.002	1.493	4.444	4.444	7.175	14.320
	Y Direction	73.54	-13889.3							
90 Degree	X Direction	0.89	-110545.3	-6.903	-3.436	5.931	9.397	9.397	7.175	13.469
	Y Direction	85.62	-16315.1							
120 Degree	X Direction	-43.25	-46213.9	-2.913	0.043	2.452	5.408	5.408	7.175	14.032
	Y Direction	74.49	-13910.8							
150 Degree	X Direction	-75.20	-53692.1	-2.643	-1.096	3.591	5.137	5.137	7.175	14.102
	Y Direction	42.53	-7276.5							
180 Degree	X Direction	-86.52	-56653.2	-2.103	-1.980	4.475	4.597	4.597	7.175	14.266
	Y Direction	-0.41	-575.8							
210 Degree	X Direction	-74.16	-53742.4	-0.750	-2.995	5.490	3.244	5.490	7.175	14.012
	Y Direction	-42.8	10568.2							
240 Degree	X Direction	-42.30	-46507.3	0.356	-3.261	5.756	2.138	5.756	7.175	13.952
	Y Direction	-74.17	17024.3							
270 Degree	X Direction	0.90	-154525.5	-5.665	-9.781	12.275	8.159	12.275	7.175	13.290
	Y Direction	-86.11	19370.1							
300 Degree	X Direction	44.13	-28131.1	1.406	-2.178	4.672	1.088	4.672	7.175	14.241
	Y Direction	-74.88	16869.1							
330 Degree	X Direction	77.61	-21313.2	1.125	-1.105	3.599	1.370	3.599	7.175	14.699
	Y Direction	-44.3	10491.5							

LOAD CASE				3 Mudmat Pressure 3 Degree						
H=12 ft |T=5.82 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	119.12	-25919.4	-0.024	-0.490	2.985	2.519	2.985	7.175	15.109
	Y Direction	-2.05	2194.2							
30 Degree	X Direction	103.34	-30445.8	-1.545	0.505	1.989	4.040	4.040	7.175	14.481
	Y Direction	55.25	-9650.0							
60 Degree	X Direction	60.33	-39799.0	-3.050	0.924	1.570	5.545	5.545	7.175	13.999
	Y Direction	99.03	-18703.5							
90 Degree	X Direction	1.01	-125450.3	-8.387	-3.683	6.177	10.881	10.881	7.175	13.364
	Y Direction	116.18	-22138.3							
120 Degree	X Direction	-58.14	-62124.3	-4.344	-0.374	2.868	6.838	6.838	7.175	13.754
	Y Direction	100.04	-18682.2							
150 Degree	X Direction	-100.25	-71577.5	-3.942	-1.873	4.367	6.437	6.437	7.175	13.820
	Y Direction	56.92	-9738.5							
180 Degree	X Direction	-114.03	-74666.7	-3.187	-2.987	5.481	5.681	5.681	7.175	13.968
	Y Direction	-0.67	-940.9							
210 Degree	X Direction	-97.44	-70613.0	-1.363	-4.341	6.835	3.857	6.835	7.175	13.755
	Y Direction	-56.76	14015.2							
240 Degree	X Direction	-56.26	-61855.8	0.048	-4.735	7.229	2.446	7.229	7.175	13.698
	Y Direction	-98.07	22510.1							
270 Degree	X Direction	0.99	-169978.1	-5.887	-11.352	13.846	8.382	13.846	7.175	13.223
	Y Direction	-114.33	25718.1							
300 Degree	X Direction	58.84	-37508.1	1.472	-3.332	5.827	1.022	5.827	7.175	13.936
	Y Direction	-100.37	22611.6							
330 Degree	X Direction	103.12	-28318.7	1.094	-1.887	4.381	1.401	4.381	7.175	14.343
	Y Direction	-59.23	14027.4							

Lampiran Tabel Bearing Capacity (Full Mudmat 0 Derajat Kemiringan)

LOAD CASE				Full Mudmat Pressure 0 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	32.28	-7023.8	0.725	0.601	1.373	1.250	1.373	7.144	19.428
	Y Direction	-0.55	588.6964286							
30 Degree	X Direction	27.25	-8028.3	0.348	0.885	1.089	1.626	1.626	7.144	18.619
	Y Direction	14.62	-2553.546612							
60 Degree	X Direction	15.78	-10409.9	-0.006	1.020	0.955	1.981	1.981	7.144	17.832
	Y Direction	25.85	-4882.21133							
90 Degree	X Direction	0.12	-14905.0	-0.317	0.915	1.059	2.291	2.291	7.144	17.343
	Y Direction	30.77	-5863.283442							
120 Degree	X Direction	-15.93	-17021.7	-0.325	0.728	1.247	2.299	2.299	7.144	17.333
	Y Direction	26.82	-5008.565052							
150 Degree	X Direction	-27.14	-19377.7	-0.184	0.369	1.605	2.158	2.158	7.144	17.536
	Y Direction	15.39	-2633.1							
180 Degree	X Direction	-30.85	-20200.5	0.105	0.004	1.970	1.870	1.970	7.144	17.852
	Y Direction	0.34	477.4571429							
210 Degree	X Direction	-26.75	-19385.2	0.471	-0.286	2.261	1.504	2.261	7.144	17.386
	Y Direction	-14.59	3602.569204							
240 Degree	X Direction	-15.48	-17019.7	0.824	-0.421	2.396	1.150	2.396	7.144	17.208
	Y Direction	-25.82	5926.5							
270 Degree	X Direction	0.07	-12018.7	1.152	-0.287	2.262	0.822	2.262	7.144	17.384
	Y Direction	-30.45	6849.601083							
300 Degree	X Direction	16.28	-10377.8	1.154	-0.137	2.112	0.821	2.112	7.144	17.609
	Y Direction	-27.26	6141.194355							
330 Degree	X Direction	28.54	-7837.6	1.028	0.223	1.751	0.947	1.751	7.144	18.305
	Y Direction	-16.17	3829.531706							

LOAD CASE				Full Mudmat Pressure 0 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	48.20	-10487.9	0.589	0.418	1.557	1.386	1.557	7.144	18.814
	Y Direction	-0.76	813.5							
30 Degree	X Direction	41.25	-12153.0	0.022	0.830	1.144	1.952	1.952	7.144	17.885
	Y Direction	22.02	-3846.0							
60 Degree	X Direction	23.61	-15575.3	-0.502	1.039	0.936	2.477	2.477	7.144	17.110
	Y Direction	38.82	-7331.8							
90 Degree	X Direction	0.16	-19873.3	-0.838	0.978	0.997	2.813	2.813	7.144	16.766
	Y Direction	45.34	-8639.6							
120 Degree	X Direction	-22.96	-24533.4	-0.913	0.622	1.352	2.888	2.888	7.144	16.700
	Y Direction	39.12	-7305.6							
150 Degree	X Direction	-39.47	-28181.2	-0.717	0.089	1.885	2.691	2.691	7.144	16.880
	Y Direction	22.42	-3835.9							
180 Degree	X Direction	-45.11	-29538.0	-0.347	-0.406	2.380	2.321	2.380	7.144	17.227
	Y Direction	0.2	280.9							
210 Degree	X Direction	-38.92	-28204.6	0.254	-0.884	2.858	1.720	2.858	7.144	16.725
	Y Direction	-21.93	5415.0							
240 Degree	X Direction	-22.56	-24803.9	0.772	-1.088	3.062	1.202	3.062	7.144	16.559
	Y Direction	-38.55	8848.4							
270 Degree	X Direction	0.23	-39489.9	0.238	-1.910	3.884	1.736	3.884	7.144	16.065
	Y Direction	-45.43	10219.3							
300 Degree	X Direction	23.81	-15177.9	1.239	-0.666	2.640	0.736	2.640	7.144	16.932
	Y Direction	-40.22	9060.9							
330 Degree	X Direction	41.93	-11514.8	1.048	-0.137	2.111	0.926	2.111	7.144	17.610
	Y Direction	-23.8	5636.5							

LOAD CASE H=9 ft |T=5.24 s				Full Mudmat Pressure 0 Degree						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	I (kips/ft^2)	II (kips/ft^2)	III (kips/ft^2)	IV (kips/ft^2)	Max Pressure (kips/ft^2)	Bearing Cap (kips/ft^2)	Safety Factor
0 Degree	X Direction	64.23	-13975.9	0.461	0.223	1.752	1.513	1.752	7.144	18.304
	Y Direction	-1.06	1134.6							
30 Degree	X Direction	55.55	-16366.0	-0.312	0.776	1.199	2.287	2.287	7.144	17.350
	Y Direction	29.64	-5177.0							
60 Degree	X Direction	32.08	-21162.8	-1.028	1.048	0.926	3.002	3.002	7.144	16.605
	Y Direction	52.3	-9877.7							
90 Degree	X Direction	0.62	-77009.1	-3.786	-1.349	3.324	5.761	5.761	7.144	15.466
	Y Direction	60.85	-11595.1							
120 Degree	X Direction	-30.92	-33038.9	-1.577	0.501	1.474	3.551	3.551	7.144	16.238
	Y Direction	52.93	-9884.5							
150 Degree	X Direction	-53.76	-38384.1	-1.328	-0.241	2.215	3.303	3.303	7.144	16.389
	Y Direction	30.24	-5173.8							
180 Degree	X Direction	-61.88	-40518.9	-0.926	-0.841	2.815	2.901	2.901	7.144	16.689
	Y Direction	-0.29	-407.2							
210 Degree	X Direction	-53.07	-38458.8	0.002	-1.578	3.553	1.973	3.553	7.144	16.237
	Y Direction	-30.44	7516.3							
240 Degree	X Direction	-30.28	-33291.7	0.722	-1.821	3.796	1.252	3.796	7.144	16.108
	Y Direction	-52.72	12100.9							
270 Degree	X Direction	0.60	-103017.0	-2.322	-5.215	7.189	4.297	7.189	7.144	15.220
	Y Direction	-61.18	13762.2							
300 Degree	X Direction	31.51	-20086.4	1.319	-1.200	3.174	0.655	3.174	7.144	16.477
	Y Direction	-53.2	11985.0							
330 Degree	X Direction	55.39	-15211.2	1.068	-0.498	2.472	0.907	2.472	7.144	17.116
	Y Direction	-31.44	7445.9							

LOAD CASE H=12 ft |T=5.82 s				Full Mudmat Pressure 0 Degree						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	I (kips/ft^2)	II (kips/ft^2)	III (kips/ft^2)	IV (kips/ft^2)	Max Pressure (kips/ft^2)	Bearing Cap (kips/ft^2)	Safety Factor
0 Degree	X Direction	83.91	-18258.0	0.300	-0.011	1.985	1.675	1.985	7.144	17.824
	Y Direction	-1.38	1477.1							
30 Degree	X Direction	72.80	-21448.1	-0.716	0.710	1.264	2.691	2.691	7.144	16.881
	Y Direction	38.86	-6787.3							
60 Degree	X Direction	42.48	-28023.6	-1.687	1.074	0.901	3.661	3.661	7.144	16.177
	Y Direction	69.53	-13131.9							
90 Degree	X Direction	0.70	-86945.7	-4.659	-1.394	3.369	6.633	6.633	7.144	15.303
	Y Direction	81.5	-15530.0							
120 Degree	X Direction	-40.98	-43788.3	-2.412	0.344	1.631	4.386	4.386	7.144	15.855
	Y Direction	70.2	-13109.7							
150 Degree	X Direction	-70.69	-50472.0	-2.061	-0.624	2.599	4.036	4.036	7.144	15.996
	Y Direction	39.96	-6836.8							
180 Degree	X Direction	-80.47	-52691.6	-1.513	-1.377	3.352	3.488	3.488	7.144	16.274
	Y Direction	-0.46	-646.0							
210 Degree	X Direction	-68.81	-49865.3	-0.280	-2.350	4.324	2.254	4.324	7.144	15.878
	Y Direction	-39.88	9847.2							
240 Degree	X Direction	-39.72	-43670.7	0.632	-2.690	4.664	1.342	4.664	7.144	15.758
	Y Direction	-68.86	15805.5							
270 Degree	X Direction	0.66	-113318.7	-2.347	-6.141	8.116	4.321	8.116	7.144	15.106
	Y Direction	-80.25	18051.9							
300 Degree	X Direction	41.45	-26422.7	1.435	-1.900	3.874	0.540	3.874	7.144	16.070
	Y Direction	-70.42	15864.4							
330 Degree	X Direction	72.63	-19945.6	1.100	-0.967	2.942	0.874	2.942	7.144	16.654
	Y Direction	-41.53	9835.5							

Lampiran Tabel Bearing Capacity (Full Mudmat 1 Derajat Kemiringan)

LOAD CASE				Full Mudmat Pressure 1 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	35.98	-7828.9	0.698	0.554	1.421	1.277	1.421	7.144	18.747
	Y Direction	-0.64	685.0							
30 Degree	X Direction	30.33	-8935.7	0.276	0.874	1.101	1.699	1.699	7.144	17.924
	Y Direction	16.3	-2847.0							
60 Degree	X Direction	17.57	-11590.7	-0.121	1.025	0.950	2.095	2.095	7.144	17.129
	Y Direction	28.85	-5448.8							
90 Degree	X Direction	0.14	-17389.1	-0.504	0.873	1.101	2.478	2.478	7.144	16.601
	Y Direction	34.38	-6551.2							
120 Degree	X Direction	-17.74	-18955.7	-0.476	0.701	1.274	2.451	2.451	7.144	16.634
	Y Direction	29.98	-5598.7							
150 Degree	X Direction	-30.20	-21562.5	-0.317	0.301	1.674	2.292	2.292	7.144	16.836
	Y Direction	17.19	-2941.1							
180 Degree	X Direction	-34.31	-22466.1	0.009	-0.109	2.083	1.965	2.083	7.144	17.148
	Y Direction	0.4	561.7							
210 Degree	X Direction	-29.75	-21559.3	0.414	-0.430	2.404	1.561	2.404	7.144	16.690
	Y Direction	-16.26	4014.9							
240 Degree	X Direction	-17.23	-18943.7	0.808	-0.583	2.557	1.167	2.557	7.144	16.513
	Y Direction	-28.82	6615.1							
270 Degree	X Direction	0.09	-15452.6	1.078	-0.530	2.505	0.897	2.505	7.144	16.571
	Y Direction	-34.01	7650.4							
300 Degree	X Direction	18.16	-11576.3	1.175	-0.269	2.244	0.800	2.244	7.144	16.903
	Y Direction	-30.5	6871.1							
330 Degree	X Direction	31.84	-8743.9	1.034	0.133	1.842	0.940	1.842	7.144	17.598
	Y Direction	-18.11	4289.0							

LOAD CASE				Full Mudmat Pressure 1 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	54.58	-11876.1	0.539	0.339	1.636	1.435	1.636	7.144	18.087
	Y Direction	-0.89	952.6							
30 Degree	X Direction	46.69	-13755.7	-0.106	0.810	1.164	2.080	2.080	7.144	17.153
	Y Direction	24.94	-4356.1							
60 Degree	X Direction	26.71	-17620.3	-0.700	1.047	0.927	2.674	2.674	7.144	16.390
	Y Direction	44	-8310.1							
90 Degree	X Direction	0.18	-22357.5	-1.074	0.985	0.990	3.049	3.049	7.144	16.062
	Y Direction	51.41	-9796.3							
120 Degree	X Direction	-25.96	-27739.0	-1.164	0.577	1.397	3.138	3.138	7.144	15.995
	Y Direction	44.35	-8282.2							
150 Degree	X Direction	-44.61	-31851.1	-0.940	-0.026	2.001	2.914	2.914	7.144	16.170
	Y Direction	25.41	-4347.4							
180 Degree	X Direction	-50.97	-33375.1	-0.518	-0.589	2.563	2.493	2.563	7.144	16.506
	Y Direction	0.24	337.0							
210 Degree	X Direction	-43.96	-31857.0	0.161	-1.128	3.102	1.814	3.102	7.144	16.022
	Y Direction	-24.83	6131.0							
240 Degree	X Direction	-25.50	-28036.3	0.747	-1.361	3.335	1.228	3.335	7.144	15.861
	Y Direction	-43.68	10025.9							
270 Degree	X Direction	0.27	-46357.7	0.065	-2.371	4.345	1.910	4.345	7.144	15.363
	Y Direction	-51.51	11587.0							
300 Degree	X Direction	26.95	-17179.5	1.275	-0.886	2.861	0.700	2.861	7.144	16.216
	Y Direction	-45.64	10281.9							
330 Degree	X Direction	47.49	-13041.7	1.058	-0.287	2.262	0.917	2.262	7.144	16.877
	Y Direction	-27.02	6399.1							

LOAD CASE H=9 ft |T=5.24 s				Full Mudmat Pressure 1 Degree						
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	73.30	-15949.4	0.390	0.111	1.863	1.584	1.863	7.144	17.553
	Y Direction	-1.24	1327.2							
30 Degree	X Direction	63.40	-18678.7	-0.496	0.746	1.228	2.471	2.471	7.144	16.610
	Y Direction	33.84	-5910.5							
60 Degree	X Direction	36.61	-24151.2	-1.314	1.058	0.916	3.288	3.288	7.144	15.892
	Y Direction	59.75	-11284.8							
90 Degree	X Direction	0.72	-89429.9	-4.533	-1.749	3.723	6.508	6.508	7.144	14.817
	Y Direction	69.52	-13247.2							
120 Degree	X Direction	-35.25	-37665.7	-1.939	0.435	1.539	3.913	3.913	7.144	15.545
	Y Direction	60.48	-11294.5							
150 Degree	X Direction	-61.30	-43767.6	-1.654	-0.412	2.387	3.629	3.629	7.144	15.688
	Y Direction	34.54	-5909.5							
180 Degree	X Direction	-70.56	-46202.6	-1.194	-1.097	3.071	3.169	3.169	7.144	15.973
	Y Direction	-0.33	-463.4							
210 Degree	X Direction	-60.50	-43843.2	-0.134	-1.939	3.914	2.109	3.914	7.144	15.544
	Y Direction	-34.78	8587.9							
240 Degree	X Direction	-34.51	-37942.5	0.689	-2.218	4.192	1.286	4.192	7.144	15.423
	Y Direction	-60.24	13827.0							
270 Degree	X Direction	0.70	-120186.5	-2.908	-6.214	8.188	4.883	8.188	7.144	14.591
	Y Direction	-69.91	15726.0							
300 Degree	X Direction	35.95	-22916.7	1.369	-1.510	3.484	0.606	3.484	7.144	15.769
	Y Direction	-60.79	13694.9							
330 Degree	X Direction	63.21	-17358.7	1.081	-0.709	2.683	0.894	2.683	7.144	16.381
	Y Direction	-35.95	8514.0							

LOAD CASE H=12 ft |T=5.82 s				Full Mudmat Pressure 1 Degree						
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	96.30	-20954.0	0.201	-0.161	2.136	1.773	2.136	7.144	17.064
	Y Direction	-1.61	1723.3							
30 Degree	X Direction	83.54	-24612.3	-0.968	0.670	1.305	2.942	2.942	7.144	16.147
	Y Direction	44.61	-7791.6							
60 Degree	X Direction	48.76	-32166.4	-2.083	1.088	0.887	4.057	4.057	7.144	15.480
	Y Direction	79.87	-15084.8							
90 Degree	X Direction	0.81	-100608.6	-5.533	-1.782	3.756	7.507	7.507	7.144	14.671
	Y Direction	93.65	-17845.2							
120 Degree	X Direction	-47.01	-50231.6	-2.915	0.251	1.723	4.889	4.889	7.144	15.180
	Y Direction	80.65	-15061.2							
150 Degree	X Direction	-81.08	-57890.3	-2.511	-0.860	2.834	4.485	4.485	7.144	15.312
	Y Direction	45.91	-7854.8							
180 Degree	X Direction	-92.28	-60424.8	-1.882	-1.723	3.697	3.856	3.856	7.144	15.571
	Y Direction	-0.54	-758.3							
210 Degree	X Direction	-78.88	-57162.9	-0.463	-2.840	4.815	2.438	4.815	7.144	15.203
	Y Direction	-45.8	11309.0							
240 Degree	X Direction	-45.54	-50069.5	0.584	-3.232	5.207	1.391	5.207	7.144	15.091
	Y Direction	-79.1	18155.9							
270 Degree	X Direction	0.77	-132205.2	-2.937	-7.295	9.270	4.911	9.270	7.144	14.490
	Y Direction	-92.18	20735.5							
300 Degree	X Direction	47.56	-30317.6	1.503	-2.328	4.302	0.471	4.302	7.144	15.379
	Y Direction	-80.91	18227.6							
330 Degree	X Direction	83.35	-22889.5	1.119	-1.257	3.232	0.856	3.232	7.144	15.929
	Y Direction	-47.73	11303.9							

Lampiran Tabel Bearing Capacity (Full Mudmat 2 Derajat Kemiringan)

LOAD CASE				Full Mudmat Pressure 2 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	39.41	-8575.3	0.673	0.509	1.465	1.301	1.465	7.144	18.087
	Y Direction	-0.73	781.4							
30 Degree	X Direction	33.19	-9778.4	0.208	0.863	1.111	1.766	1.766	7.144	17.256
	Y Direction	17.85	-3117.7							
60 Degree	X Direction	19.23	-12685.8	-0.226	1.029	0.945	2.200	2.200	7.144	16.458
	Y Direction	31.62	-5972.0							
90 Degree	X Direction	0.16	-19873.3	-0.686	0.825	1.149	2.660	2.660	7.144	15.897
	Y Direction	37.73	-7189.5							
120 Degree	X Direction	-19.42	-20750.8	-0.616	0.675	1.299	2.591	2.591	7.144	15.969
	Y Direction	32.9	-6144.0							
150 Degree	X Direction	-33.04	-23590.2	-0.441	0.237	1.737	2.416	2.416	7.144	16.169
	Y Direction	18.87	-3228.5							
180 Degree	X Direction	-37.52	-24568.0	-0.081	-0.213	2.188	2.055	2.188	7.144	16.477
	Y Direction	0.45	631.9							
210 Degree	X Direction	-32.53	-23573.9	0.361	-0.563	2.538	1.613	2.538	7.144	16.027
	Y Direction	-17.81	4397.7							
240 Degree	X Direction	-18.84	-20713.9	0.793	-0.731	2.705	1.181	2.705	7.144	15.852
	Y Direction	-31.59	7250.9							
270 Degree	X Direction	0.10	-17169.5	1.076	-0.687	2.662	0.898	2.662	7.144	15.896
	Y Direction	-37.3	8390.5							
300 Degree	X Direction	19.89	-12679.1	1.195	-0.391	2.365	0.780	2.365	7.144	16.232
	Y Direction	-33.49	7544.7							
330 Degree	X Direction	34.90	-9584.2	1.040	0.049	1.925	0.934	1.925	7.144	16.923
	Y Direction	-19.9	4712.9							

LOAD CASE				Full Mudmat Pressure 2 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	60.49	-13162.1	0.492	0.267	1.707	1.482	1.707	7.144	17.396
	Y Direction	-1	1070.4							
30 Degree	X Direction	51.73	-15240.6	-0.224	0.791	1.183	2.198	2.198	7.144	16.462
	Y Direction	27.64	-4827.6							
60 Degree	X Direction	29.59	-19520.2	-0.882	1.054	0.920	2.857	2.857	7.144	15.713
	Y Direction	48.79	-9214.8							
90 Degree	X Direction	0.21	-26083.7	-1.359	0.925	1.049	3.333	3.333	7.144	15.355
	Y Direction	57.02	-10865.3							
120 Degree	X Direction	-28.73	-30698.8	-1.395	0.535	1.439	3.370	3.370	7.144	15.332
	Y Direction	49.19	-9186.1							
150 Degree	X Direction	-49.37	-35249.7	-1.147	-0.134	2.108	3.121	3.121	7.144	15.501
	Y Direction	28.17	-4819.7							
180 Degree	X Direction	-56.40	-36930.6	-0.678	-0.758	2.732	2.652	2.732	7.144	15.827
	Y Direction	0.27	379.2							
210 Degree	X Direction	-48.64	-35248.5	0.074	-1.354	3.329	1.900	3.329	7.144	15.358
	Y Direction	-27.52	6795.3							
240 Degree	X Direction	-28.21	-31015.8	0.724	-1.613	3.588	1.251	3.588	7.144	15.203
	Y Direction	-48.44	11118.5							
270 Degree	X Direction	0.31	-53225.5	-0.119	-2.821	4.795	2.094	4.795	7.144	14.702
	Y Direction	-57.14	12853.4							
300 Degree	X Direction	29.86	-19034.6	1.308	-1.091	3.065	0.667	3.065	7.144	15.543
	Y Direction	-50.65	11410.5							
330 Degree	X Direction	52.63	-14453.2	1.067	-0.427	2.401	0.908	2.401	7.144	16.187
	Y Direction	-30	7104.9							

LOAD CASE H=9 ft |T=5.24 s				Full Mudmat Pressure 2 Degree						
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	81.71	-17779.3	0.324	0.009	1.965	1.650	1.965	7.144	16.847
	Y Direction	-1.4	1498.5							
30 Degree	X Direction	70.66	-20817.7	-0.667	0.719	1.255	2.641	2.641	7.144	15.917
	Y Direction	37.74	-6591.7							
60 Degree	X Direction	40.81	-26921.9	-1.578	1.067	0.907	3.553	3.553	7.144	15.223
	Y Direction	66.64	-12586.1							
90 Degree	X Direction	0.81	-100608.6	-5.210	-2.104	4.079	7.185	7.185	7.144	14.206
	Y Direction	77.55	-14777.3							
120 Degree	X Direction	-39.27	-41961.1	-2.274	0.374	1.600	4.248	4.248	7.144	14.893
	Y Direction	67.47	-12599.8							
150 Degree	X Direction	-68.29	-48758.4	-1.956	-0.571	2.545	3.931	3.931	7.144	15.029
	Y Direction	38.53	-6592.2							
180 Degree	X Direction	-78.60	-51467.2	-1.445	-1.333	3.307	3.419	3.419	7.144	15.301
	Y Direction	-0.38	-533.6							
210 Degree	X Direction	-67.38	-48829.0	-0.260	-2.274	4.248	2.235	4.248	7.144	14.894
	Y Direction	-38.8	9580.5							
240 Degree	X Direction	-38.43	-42252.4	0.658	-2.584	4.559	1.317	4.559	7.144	14.779
	Y Direction	-67.2	15424.5							
270 Degree	X Direction	0.80	-137356.0	-3.510	-7.197	9.172	5.484	9.172	7.144	13.991
	Y Direction	-77.99	17543.5							
300 Degree	X Direction	40.05	-25530.3	1.414	-1.797	3.771	0.560	3.771	7.144	15.106
	Y Direction	-67.82	15278.6							
330 Degree	X Direction	70.45	-19346.9	1.093	-0.904	2.879	0.882	2.879	7.144	15.693
	Y Direction	-40.12	9501.6							

LOAD CASE H=12 ft |T=5.82 s				Full Mudmat Pressure 2 Degree						
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	107.77	-23449.8	0.109	-0.300	2.274	1.865	2.274	7.144	16.353
	Y Direction	-1.82	1948.1							
30 Degree	X Direction	93.49	-27543.8	-1.201	0.632	1.342	3.175	3.175	7.144	15.462
	Y Direction	49.94	-8722.6							
60 Degree	X Direction	54.57	-35999.2	-2.450	1.101	0.874	4.425	4.425	7.144	14.827
	Y Direction	89.45	-16894.2							
90 Degree	X Direction	0.92	-114271.5	-6.389	-2.187	4.162	8.363	8.363	7.144	14.066
	Y Direction	104.9	-19988.9							
120 Degree	X Direction	-52.59	-56194.0	-3.380	0.166	1.809	5.354	5.354	7.144	14.546
	Y Direction	90.33	-16868.9							
150 Degree	X Direction	-90.70	-64758.9	-2.927	-1.078	3.052	4.901	4.901	7.144	14.670
	Y Direction	51.41	-8795.8							
180 Degree	X Direction	-103.21	-67581.8	-2.223	-2.043	4.017	4.197	4.197	7.144	14.914
	Y Direction	-0.61	-856.6							
210 Degree	X Direction	-88.21	-63924.1	-0.633	-3.295	5.269	2.607	5.269	7.144	14.568
	Y Direction	-51.29	12664.5							
240 Degree	X Direction	-50.93	-55995.6	0.539	-3.735	5.709	1.435	5.709	7.144	14.463
	Y Direction	-88.58	20331.9							
270 Degree	X Direction	0.87	-149374.7	-3.468	-8.349	10.324	5.442	10.324	7.144	13.904
	Y Direction	-103.24	23223.4							
300 Degree	X Direction	53.21	-33919.2	1.567	-2.724	4.699	0.408	4.699	7.144	14.732
	Y Direction	-90.62	20415.1							
330 Degree	X Direction	93.28	-25616.5	1.135	-1.526	3.501	0.839	3.501	7.144	15.253
	Y Direction	-53.47	12663.3							

Lampiran Tabel Bearing Capacity (Full Mudmat 3 Derajat Kemiringan)

LOAD CASE				Full Mudmat Pressure 3 Degree						
H=3 ft |T=2.97 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	42.83	-9319.4	0.649	0.465	1.510	1.325	1.510	7.144	17.437
	Y Direction	-0.82	877.7							
30 Degree	X Direction	36.04	-10618.0	0.141	0.853	1.121	1.833	1.833	7.144	16.601
	Y Direction	19.4	-3388.4							
60 Degree	X Direction	20.89	-13780.9	-0.332	1.034	0.941	2.306	2.306	7.144	15.803
	Y Direction	34.39	-6495.1							
90 Degree	X Direction	0.17	-21115.4	-0.810	0.835	1.139	2.785	2.785	7.144	15.270
	Y Direction	41.08	-7827.9							
120 Degree	X Direction	-21.10	-22546.0	-0.757	0.649	1.325	2.731	2.731	7.144	15.321
	Y Direction	35.82	-6689.3							
150 Degree	X Direction	-35.88	-25618.0	-0.565	0.174	1.801	2.539	2.539	7.144	15.518
	Y Direction	20.54	-3514.2							
180 Degree	X Direction	-40.72	-26663.4	-0.168	-0.319	2.293	2.143	2.293	7.144	15.820
	Y Direction	0.51	716.2							
210 Degree	X Direction	-35.31	-25588.5	0.308	-0.696	2.671	1.666	2.671	7.144	15.380
	Y Direction	-19.36	4780.4							
240 Degree	X Direction	-20.46	-22495.0	0.778	-0.880	2.855	1.197	2.855	7.144	15.207
	Y Direction	-34.37	7889.0							
270 Degree	X Direction	0.11	-18886.5	1.075	-0.844	2.819	0.899	2.819	7.144	15.239
	Y Direction	-40.6	9132.8							
300 Degree	X Direction	21.63	-13788.3	1.214	-0.513	2.487	0.760	2.487	7.144	15.577
	Y Direction	-36.48	8218.3							
330 Degree	X Direction	37.95	-10421.8	1.046	-0.034	2.008	0.928	2.008	7.144	16.262
	Y Direction	-21.7	5139.2							

LOAD CASE				Full Mudmat Pressure 3 Degree						
H=6 ft |T=4.36 s										
Arah Gelombang Datang	Direction	Wave Force	Overturning Moment	I	II	III	IV	Max Pressure	Bearing Cap	Safety Factor
		(kips)	(kips.ft)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	(kips/ft^2)	
0 Degree	X Direction	66.40	-14448.0	0.446	0.194	1.780	1.528	1.780	7.144	16.718
	Y Direction	-1.12	1198.8							
30 Degree	X Direction	56.77	-16725.4	-0.342	0.772	1.202	2.316	2.316	7.144	15.789
	Y Direction	30.35	-5301.0							
60 Degree	X Direction	32.46	-21413.5	-1.065	1.062	0.912	3.039	3.039	7.144	15.055
	Y Direction	53.59	-10121.4							
90 Degree	X Direction	0.23	-28567.9	-1.586	0.923	1.052	3.560	3.560	7.144	14.711
	Y Direction	62.64	-11936.2							
120 Degree	X Direction	-31.51	-33669.4	-1.628	0.493	1.481	3.602	3.602	7.144	14.688
	Y Direction	54.03	-10090.0							
150 Degree	X Direction	-54.13	-38648.3	-1.353	-0.241	2.215	3.328	3.328	7.144	14.852
	Y Direction	30.94	-5293.6							
180 Degree	X Direction	-61.82	-40479.6	-0.837	-0.926	2.900	2.812	2.900	7.144	15.168
	Y Direction	0.3	421.3							
210 Degree	X Direction	-53.31	-38632.8	-0.012	-1.580	3.555	1.987	3.555	7.144	14.715
	Y Direction	-30.21	7459.5							
240 Degree	X Direction	-30.93	-34006.4	0.701	-1.866	3.840	1.274	3.840	7.144	14.565
	Y Direction	-53.2	12211.1							
270 Degree	X Direction	0.34	-58376.3	-0.224	-3.191	5.166	2.198	5.166	7.144	14.088
	Y Direction	-62.76	14117.6							
300 Degree	X Direction	32.76	-20883.2	1.341	-1.295	3.269	0.633	3.269	7.144	14.890
	Y Direction	-55.66	12539.2							
330 Degree	X Direction	57.78	-15867.5	1.076	-0.566	2.541	0.899	2.541	7.144	15.517
	Y Direction	-32.99	7813.0							

LOAD CASE H=9 ft |T=5.24 s				Full Mudmat Pressure 3 Degree						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	I (kips/ft^2)	II (kips/ft^2)	III (kips/ft^2)	IV (kips/ft^2)	Max Pressure (kips/ft^2)	Bearing Cap (kips/ft^2)	Safety Factor
0 Degree	X Direction	90.11	-19607.1	0.259	-0.095	2.069	1.716	2.069	7.144	16.158
	Y Direction	-1.57	1680.5							
30 Degree	X Direction	77.93	-22959.5	-0.837	0.691	1.283	2.811	2.811	7.144	15.246
	Y Direction	41.63	-7271.1							
60 Degree	X Direction	45.01	-29692.6	-1.843	1.076	0.898	3.818	3.818	7.144	14.576
	Y Direction	73.54	-13889.3							
90 Degree	X Direction	0.91	-113029.4	-5.945	-2.517	4.491	7.919	7.919	7.144	13.607
	Y Direction	85.58	-16307.4							
120 Degree	X Direction	-43.28	-46245.9	-2.609	0.314	1.661	4.583	4.583	7.144	14.264
	Y Direction	74.46	-13905.2							
150 Degree	X Direction	-75.27	-53742.1	-2.258	-0.729	2.704	4.233	4.233	7.144	14.393
	Y Direction	42.52	-7274.8							
180 Degree	X Direction	-86.63	-56725.2	-1.693	-1.569	3.544	3.668	3.668	7.144	14.653
	Y Direction	-0.42	-589.8							
210 Degree	X Direction	-74.26	-53814.8	-0.386	-2.608	4.583	2.360	4.583	7.144	14.264
	Y Direction	-42.82	10573.1							
240 Degree	X Direction	-42.35	-46562.2	0.627	-2.951	4.926	1.348	4.926	7.144	14.155
	Y Direction	-74.17	17024.3							
270 Degree	X Direction	0.89	-152808.6	-4.032	-8.102	10.076	6.007	10.076	7.144	13.414
	Y Direction	-86.07	19361.1							
300 Degree	X Direction	44.16	-28150.2	1.460	-2.085	4.059	0.514	4.059	7.144	14.465
	Y Direction	-74.86	16864.6							
330 Degree	X Direction	77.69	-21335.2	1.105	-1.100	3.075	0.870	3.075	7.144	15.028
	Y Direction	-44.3	10491.5							

LOAD CASE H=12 ft |T=5.82 s				Full Mudmat Pressure 3 Degree						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	I (kips/ft^2)	II (kips/ft^2)	III (kips/ft^2)	IV (kips/ft^2)	Max Pressure (kips/ft^2)	Bearing Cap (kips/ft^2)	Safety Factor
0 Degree	X Direction	119.23	-25943.4	0.019	-0.440	2.414	1.955	2.414	7.144	15.664
	Y Direction	-2.04	2183.5							
30 Degree	X Direction	103.45	-30478.2	-1.434	0.595	1.380	3.409	3.409	7.144	14.801
	Y Direction	55.27	-9653.5							
60 Degree	X Direction	60.39	-39838.6	-2.817	1.114	0.861	4.792	4.792	7.144	14.196
	Y Direction	99.02	-18701.6							
90 Degree	X Direction	1.03	-127934.4	-7.245	-2.593	4.567	9.219	9.219	7.144	13.480
	Y Direction	116.14	-22130.7							
120 Degree	X Direction	-58.17	-62156.3	-3.845	0.081	1.894	5.819	5.819	7.144	13.933
	Y Direction	100.01	-18676.6							
150 Degree	X Direction	-100.33	-71634.7	-3.343	-1.296	3.271	5.317	5.317	7.144	14.048
	Y Direction	56.91	-9736.8							
180 Degree	X Direction	-114.14	-74738.7	-2.563	-2.363	4.337	4.538	4.538	7.144	14.279
	Y Direction	-0.68	-954.9							
210 Degree	X Direction	-97.54	-70685.4	-0.802	-3.749	5.724	2.777	5.724	7.144	13.953
	Y Direction	-56.78	14020.1							
240 Degree	X Direction	-56.32	-61921.7	0.494	-4.237	6.211	1.480	6.211	7.144	13.855
	Y Direction	-98.06	22507.8							
270 Degree	X Direction	0.97	-166544.2	-3.999	-9.403	11.377	5.974	11.377	7.144	13.333
	Y Direction	-114.29	25709.1							
300 Degree	X Direction	58.87	-37527.3	1.630	-3.121	5.095	0.344	5.095	7.144	14.107
	Y Direction	-100.34	22604.8							
330 Degree	X Direction	103.20	-28340.7	1.153	-1.795	3.769	0.822	3.769	7.144	14.600
	Y Direction	-59.22	14025.0							

Lampiran

Tabulasi dan Perhitungan Overturning Stability Semua Kemiringan

Lampiran Tabel Overturning Stability Tanpa Mudmat (0 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat 0 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	31.90	-6941.1	555448.677	80.02	80.02
	Y Direction	-0.49	524.5	131334.960	250.41	
30 Degree	X Direction	26.98	-7948.8	545605.028	68.64	68.64
	Y Direction	14.55	-2541.3	250158.462	98.44	
60 Degree	X Direction	15.68	-10343.9	545605.028	52.75	51.56
	Y Direction	25.69	-4852.0	250158.462	51.56	
90 Degree	X Direction	0.18	-22357.5	555448.677	24.84	24.84
	Y Direction	30.53	-5817.6	250158.462	43.00	
120 Degree	X Direction	-15.69	-16765.2	254671.749	15.19	15.19
	Y Direction	26.54	-4956.3	250158.462	50.47	
150 Degree	X Direction	-26.76	-19106.4	254671.749	13.33	13.33
	Y Direction	15.19	-2598.9	250158.462	96.26	
180 Degree	X Direction	-30.47	-19951.7	254671.749	12.76	12.76
	Y Direction	0.28	393.2	254671.749	647.69	
210 Degree	X Direction	-26.49	-19196.8	254671.749	13.27	13.27
	Y Direction	-14.53	3587.8	131334.960	36.61	
240 Degree	X Direction	-15.38	-16909.7	254671.749	15.06	15.06
	Y Direction	-25.66	5889.8	131334.960	22.30	
270 Degree	X Direction	0.10	-17169.5	254671.749	14.83	14.83
	Y Direction	-30.21	6795.6	131334.960	19.33	
300 Degree	X Direction	16.05	-10231.2	555448.677	54.29	21.60
	Y Direction	-26.99	6080.4	131334.960	21.60	
330 Degree	X Direction	28.16	-7733.3	555448.677	71.83	34.72
	Y Direction	-15.97	3782.2	131334.960	34.72	

LOAD CASE				Tanpa Mudmat 0 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	47.82	-10405.2	555448.677	53.38	53.38
	Y Direction	-0.70	749.3	131334.960	175.29	
30 Degree	X Direction	40.99	-12076.4	545605.028	45.18	45.18
	Y Direction	21.95	-3833.8	250158.462	65.25	
60 Degree	X Direction	23.50	-15502.7	545605.028	35.19	34.26
	Y Direction	38.66	-7301.6	250158.462	34.26	
90 Degree	X Direction	0.22	-27325.8	555448.677	20.33	20.33
	Y Direction	45.10	-8593.9	250158.462	29.11	
120 Degree	X Direction	-22.72	-24277.0	254671.749	10.49	10.49
	Y Direction	38.85	-7255.1	250158.462	34.48	
150 Degree	X Direction	-39.10	-27917.0	254671.749	9.12	9.12
	Y Direction	22.22	-3801.7	250158.462	65.80	
180 Degree	X Direction	-44.73	-29289.1	254671.749	8.70	8.70
	Y Direction	0.14	196.6	254671.749	1295.38	
210 Degree	X Direction	-38.65	-28008.9	254671.749	9.09	9.09
	Y Direction	-21.86	5397.7	131334.960	24.33	
240 Degree	X Direction	-22.46	-24693.9	254671.749	10.31	10.31
	Y Direction	-38.39	8811.7	131334.960	14.90	
270 Degree	X Direction	0.16	-27471.2	254671.749	9.27	9.27
	Y Direction	-45.19	10165.3	131334.960	12.92	
300 Degree	X Direction	23.57	-15024.9	555448.677	36.97	14.59
	Y Direction	-39.95	9000.0	131334.960	14.59	
330 Degree	X Direction	41.56	-11413.2	555448.677	48.67	23.50
	Y Direction	-23.60	5589.2	131334.960	23.50	

LOAD CASE				Tanpa Mudmat 0 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	63.84	-13891.0	555448.677	39.99	39.99
	Y Direction	-1	1070.4	131334.960	122.70	
30 Degree	X Direction	55.28	-16286.4	545605.028	33.50	33.50
	Y Direction	29.57	-5164.7	250158.462	48.44	
60 Degree	X Direction	31.98	-21096.9	545605.028	25.86	25.40
	Y Direction	52.15	-9849.4	250158.462	25.40	
90 Degree	X Direction	0.68	-84461.6	555448.677	6.58	6.58
	Y Direction	60.61	-11549.4	250158.462	21.66	
120 Degree	X Direction	-30.68	-32782.5	254671.749	7.77	7.77
	Y Direction	52.65	-9832.3	250158.462	25.44	
150 Degree	X Direction	-53.38	-38112.8	254671.749	6.68	6.68
	Y Direction	30.04	-5139.6	250158.462	48.67	
180 Degree	X Direction	-61.49	-40263.6	254671.749	6.33	6.33
	Y Direction	-0.35	-491.5	254671.749	518.15	
210 Degree	X Direction	-52.81	-38270.4	254671.749	6.65	6.65
	Y Direction	-30.38	7501.4	131334.960	17.51	
240 Degree	X Direction	-30.18	-33181.8	254671.749	7.68	7.68
	Y Direction	-52.56	12064.2	131334.960	10.89	
270 Degree	X Direction	0.53	-90998.4	254671.749	2.80	2.80
	Y Direction	-60.94	13708.2	131334.960	9.58	
300 Degree	X Direction	31.28	-19939.7	555448.677	27.86	11.02
	Y Direction	-52.92	11921.9	131334.960	11.02	
330 Degree	X Direction	55.02	-15109.5	555448.677	36.76	17.75
	Y Direction	-31.24	7398.6	131334.960	17.75	

LOAD CASE				Tanpa Mudmat 0 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	83.52	-18173.2	555448.677	30.56	30.56
	Y Direction	-1.31	1402.2	131334.960	93.67	
30 Degree	X Direction	72.52	-21365.7	545605.028	25.54	25.54
	Y Direction	38.79	-6775.1	250158.462	36.92	
60 Degree	X Direction	42.37	-27951.0	545605.028	19.52	19.10
	Y Direction	69.36	-13099.8	250158.462	19.10	
90 Degree	X Direction	0.77	-95640.3	555448.677	5.81	5.81
	Y Direction	81.25	-15482.3	250158.462	16.16	
120 Degree	X Direction	-40.73	-43521.2	254671.749	5.85	5.85
	Y Direction	69.91	-13055.5	250158.462	19.16	
150 Degree	X Direction	-70.30	-50193.5	254671.749	5.07	5.07
	Y Direction	39.76	-6802.6	250158.462	36.77	
180 Degree	X Direction	-80.07	-52429.7	254671.749	4.86	4.86
	Y Direction	-0.53	-744.3	254671.749	342.18	
210 Degree	X Direction	-68.53	-49662.4	254671.749	5.13	5.13
	Y Direction	-39.81	9829.9	131334.960	13.36	
240 Degree	X Direction	-39.61	-43549.7	254671.749	5.85	5.85
	Y Direction	-68.7	15768.8	131334.960	8.33	
270 Degree	X Direction	0.59	-101300.1	254671.749	2.51	2.51
	Y Direction	-80	17995.7	131334.960	7.30	
300 Degree	X Direction	41.21	-26269.7	555448.677	21.14	8.31
	Y Direction	-70.14	15801.3	131334.960	8.31	
330 Degree	X Direction	72.26	-19844.0	555448.677	27.99	13.42
	Y Direction	-41.33	9788.2	131334.960	13.42	

Lampiran Tabel Overturning Stability Tanpa Mudmat (1 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat 1 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	35.53	-7731.0	546466.363	70.69	70.69
	Y Direction	-0.57	610.1	122352.646	200.54	
30 Degree	X Direction	30.02	-8844.4	545605.028	61.69	61.69
	Y Direction	16.22	-2833.0	250158.462	88.30	
60 Degree	X Direction	17.45	-11511.6	536622.714	46.62	46.22
	Y Direction	28.66	-5412.9	250158.462	46.22	
90 Degree	X Direction	0.22	-27325.8	546466.363	20.00	20.00
	Y Direction	34.10	-6497.8	250158.462	38.50	
120 Degree	X Direction	-17.47	-18667.2	254671.749	13.64	13.64
	Y Direction	29.65	-5537.1	250158.462	45.18	
150 Degree	X Direction	-29.77	-21255.5	254671.749	11.98	11.98
	Y Direction	16.96	-2901.7	250158.462	86.21	
180 Degree	X Direction	-33.86	-22171.5	254671.749	11.49	11.49
	Y Direction	0.33	463.4	254671.749	549.56	
210 Degree	X Direction	-29.45	-21341.9	254671.749	11.93	11.93
	Y Direction	-16.19	3997.6	122352.646	30.61	
240 Degree	X Direction	-17.11	-18811.8	254671.749	13.54	13.54
	Y Direction	-28.63	6571.5	122352.646	18.62	
270 Degree	X Direction	0.11	-18886.5	254671.749	13.48	13.48
	Y Direction	-33.73	7587.4	122352.646	16.13	
300 Degree	X Direction	17.88	-11397.8	546466.363	47.94	18.00
	Y Direction	-30.18	6799.0	122352.646	18.00	
330 Degree	X Direction	31.40	-8623.0	546466.363	63.37	28.89
	Y Direction	-17.88	4234.5	122352.646	28.89	

LOAD CASE				Tanpa Mudmat 1 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	54.13	-11778.2	546466.363	46.40	46.40
	Y Direction	-0.81	867.0	122352.646	141.12	
30 Degree	X Direction	46.39	-13667.3	545605.028	39.92	39.92
	Y Direction	24.86	-4342.1	250158.462	57.61	
60 Degree	X Direction	26.59	-17541.1	536622.714	30.59	30.23
	Y Direction	43.81	-8274.3	250158.462	30.23	
90 Degree	X Direction	0.26	-32294.1	546466.363	16.92	16.92
	Y Direction	51.13	-9742.9	250158.462	25.68	
120 Degree	X Direction	-25.68	-27439.8	254671.749	9.28	9.28
	Y Direction	44.03	-8222.5	250158.462	30.42	
150 Degree	X Direction	-44.18	-31544.1	254671.749	8.07	8.07
	Y Direction	25.17	-4306.4	250158.462	58.09	
180 Degree	X Direction	-50.52	-33080.4	254671.749	7.70	7.70
	Y Direction	0.17	238.7	254671.749	1066.78	
210 Degree	X Direction	-43.65	-31632.3	254671.749	8.05	8.05
	Y Direction	-24.76	6113.8	122352.646	20.01	
240 Degree	X Direction	-25.37	-27893.4	254671.749	9.13	9.13
	Y Direction	-43.50	9984.6	122352.646	12.25	
270 Degree	X Direction	0.30	-51508.5	254671.749	4.94	4.94
	Y Direction	-51.23	11524.0	122352.646	10.62	
300 Degree	X Direction	26.67	-17001.1	546466.363	32.14	11.98
	Y Direction	-45.32	10209.8	122352.646	11.98	
330 Degree	X Direction	47.05	-12920.8	546466.363	42.29	19.28
	Y Direction	-26.79	6344.7	122352.646	19.28	

LOAD CASE				Tanpa Mudmat 1 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	72.85	-15851.5	546466.363	34.47	34.47
	Y Direction	-1.17	1252.3	122352.646	97.70	
30 Degree	X Direction	63.08	-18584.5	545605.028	29.36	29.36
	Y Direction	33.77	-5898.3	250158.462	42.41	
60 Degree	X Direction	36.49	-24072.0	536622.714	22.29	22.24
	Y Direction	59.56	-11248.9	250158.462	22.24	
90 Degree	X Direction	0.80	-99366.5	546466.363	5.50	5.50
	Y Direction	69.24	-13193.8	250158.462	18.96	
120 Degree	X Direction	-34.97	-37366.5	254671.749	6.82	6.82
	Y Direction	60.16	-11234.7	250158.462	22.27	
150 Degree	X Direction	-60.86	-43453.5	254671.749	5.86	5.86
	Y Direction	34.31	-5870.2	250158.462	42.62	
180 Degree	X Direction	-70.11	-45907.9	254671.749	5.55	5.55
	Y Direction	-0.41	-575.8	254671.749	442.32	
210 Degree	X Direction	-60.19	-43618.6	254671.749	5.84	5.84
	Y Direction	-34.71	8570.6	122352.646	14.28	
240 Degree	X Direction	-34.39	-37810.5	254671.749	6.74	6.74
	Y Direction	-60.05	13783.4	122352.646	8.88	
270 Degree	X Direction	0.62	-106450.9	254671.749	2.39	2.39
	Y Direction	-69.63	15663.0	122352.646	7.81	
300 Degree	X Direction	35.67	-22738.2	546466.363	24.03	8.98
	Y Direction	-60.47	13622.8	122352.646	8.98	
330 Degree	X Direction	62.77	-17237.8	546466.363	31.70	14.46
	Y Direction	-35.72	8459.5	122352.646	14.46	

LOAD CASE				Tanpa Mudmat 1 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	95.84	-20853.9	546466.363	26.20	26.20
	Y Direction	-1.54	1648.4	122352.646	74.23	
30 Degree	X Direction	83.22	-24518.1	545605.028	22.25	22.25
	Y Direction	44.54	-7779.4	250158.462	32.16	
60 Degree	X Direction	48.63	-32080.7	536622.714	16.73	16.62
	Y Direction	79.68	-15048.9	250158.462	16.62	
90 Degree	X Direction	0.90	-111787.4	546466.363	4.89	4.89
	Y Direction	93.36	-17789.9	250158.462	14.06	
120 Degree	X Direction	-46.72	-49921.7	254671.749	5.10	5.10
	Y Direction	80.32	-14999.6	250158.462	16.68	
150 Degree	X Direction	-80.62	-57561.9	254671.749	4.42	4.42
	Y Direction	45.66	-7812.0	250158.462	32.02	
180 Degree	X Direction	-91.81	-60117.1	254671.749	4.24	4.24
	Y Direction	-0.61	-856.6	254671.749	297.30	
210 Degree	X Direction	-78.57	-56938.2	254671.749	4.47	4.47
	Y Direction	-45.72	11289.2	122352.646	10.84	
240 Degree	X Direction	-45.41	-49926.6	254671.749	5.10	5.10
	Y Direction	-78.91	18112.3	122352.646	6.76	
270 Degree	X Direction	0.69	-118469.6	254671.749	2.15	2.15
	Y Direction	-91.9	20672.5	122352.646	5.92	
300 Degree	X Direction	47.28	-30139.1	546466.363	18.13	6.74
	Y Direction	-80.59	18155.5	122352.646	6.74	
330 Degree	X Direction	82.91	-22768.7	546466.363	24.00	10.88
	Y Direction	-47.5	11249.4	122352.646	10.88	

Lampiran Tabel Overturning Stability Tanpa Mudmat (2 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat 2 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	38.90	-8464.3	537525.319	63.51	63.51
	Y Direction	-0.65	695.7	113411.602	163.01	
30 Degree	X Direction	32.84	-9675.2	545605.028	56.39	56.39
	Y Direction	17.76	-3102.0	250158.462	80.64	
60 Degree	X Direction	19.09	-12593.5	527681.670	41.90	41.90
	Y Direction	31.41	-5932.3	250158.462	42.17	
90 Degree	X Direction	0.24	-29810.0	537525.319	18.03	18.03
	Y Direction	37.41	-7128.5	250158.462	35.09	
120 Degree	X Direction	-19.11	-20419.6	254671.749	12.47	12.47
	Y Direction	32.53	-6074.9	250158.462	41.18	
150 Degree	X Direction	-32.55	-23240.4	254671.749	10.96	10.96
	Y Direction	18.60	-3182.3	250158.462	78.61	
180 Degree	X Direction	-37.01	-24234.1	254671.749	10.51	10.51
	Y Direction	0.37	519.6	254671.749	490.14	
210 Degree	X Direction	-32.18	-23320.2	254671.749	10.92	10.92
	Y Direction	-17.73	4377.9	113411.602	25.91	
240 Degree	X Direction	-18.71	-20570.9	254671.749	12.38	12.38
	Y Direction	-31.38	7202.7	113411.602	15.75	
270 Degree	X Direction	0.12	-20603.4	254671.749	12.36	12.36
	Y Direction	-36.98	8318.5	113411.602	13.63	
300 Degree	X Direction	19.58	-12481.5	537525.319	43.07	15.20
	Y Direction	-33.13	7463.6	113411.602	15.20	
330 Degree	X Direction	34.40	-9446.9	537525.319	56.90	24.38
	Y Direction	-19.64	4651.3	113411.602	24.38	

LOAD CASE				Tanpa Mudmat 2 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	59.98	-13051.1	537525.319	41.19	41.19
	Y Direction	-0.92	984.7	113411.602	115.17	
30 Degree	X Direction	51.38	-15137.4	545605.028	36.04	36.04
	Y Direction	27.56	-4813.7	250158.462	51.97	
60 Degree	X Direction	29.45	-19427.8	527681.670	27.16	27.16
	Y Direction	48.58	-9175.2	250158.462	27.26	
90 Degree	X Direction	0.30	-37262.5	537525.319	14.43	14.43
	Y Direction	56.71	-10806.2	250158.462	23.15	
120 Degree	X Direction	-28.42	-30367.6	254671.749	8.39	8.39
	Y Direction	48.83	-9118.9	250158.462	27.43	
150 Degree	X Direction	-48.88	-34899.9	254671.749	7.30	7.30
	Y Direction	27.91	-4775.2	250158.462	52.39	
180 Degree	X Direction	-55.89	-36596.7	254671.749	6.96	6.96
	Y Direction	0.19	266.8	254671.749	954.49	
210 Degree	X Direction	-48.29	-34994.9	254671.749	7.28	7.28
	Y Direction	-27.44	6775.5	113411.602	16.74	
240 Degree	X Direction	-28.08	-30872.9	254671.749	8.25	8.25
	Y Direction	-48.23	11070.3	113411.602	10.24	
270 Degree	X Direction	0.22	-37772.9	254671.749	6.74	6.74
	Y Direction	-56.82	12781.4	113411.602	8.87	
300 Degree	X Direction	29.54	-18830.6	537525.319	28.55	10.01
	Y Direction	-50.29	11329.4	113411.602	10.01	
330 Degree	X Direction	52.14	-14318.6	537525.319	37.54	16.10
	Y Direction	-29.74	7043.3	113411.602	16.10	

LOAD CASE				Tanpa Mudmat 2 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	81.19	-17666.2	537525.319	30.43	30.43
	Y Direction	-1.32	1412.9	113411.602	80.27	
30 Degree	X Direction	70.31	-20714.5	545605.028	26.34	26.34
	Y Direction	37.65	-6576.0	250158.462	38.04	
60 Degree	X Direction	40.67	-26829.5	527681.670	19.67	19.67
	Y Direction	66.43	-12546.4	250158.462	19.94	
90 Degree	X Direction	0.90	-111787.4	537525.319	4.81	4.81
	Y Direction	77.23	-14716.3	250158.462	17.00	
120 Degree	X Direction	-38.95	-41619.2	254671.749	6.12	6.12
	Y Direction	67.1	-12530.8	250158.462	19.96	
150 Degree	X Direction	-67.79	-48401.4	254671.749	5.26	5.26
	Y Direction	38.27	-6547.7	250158.462	38.21	
180 Degree	X Direction	-78.08	-51126.7	254671.749	4.98	4.98
	Y Direction	-0.46	-646.0	254671.749	394.25	
210 Degree	X Direction	-67.03	-48575.4	254671.749	5.24	5.24
	Y Direction	-38.71	9558.3	113411.602	11.87	
240 Degree	X Direction	-38.30	-42109.4	254671.749	6.05	6.05
	Y Direction	-66.99	15376.3	113411.602	7.38	
270 Degree	X Direction	0.71	-121903.5	254671.749	2.09	2.09
	Y Direction	-77.67	17471.5	113411.602	6.49	
300 Degree	X Direction	39.74	-25332.7	537525.319	21.22	7.46
	Y Direction	-67.46	15197.5	113411.602	7.46	
330 Degree	X Direction	69.96	-19212.4	537525.319	27.98	12.01
	Y Direction	-39.86	9440.0	113411.602	12.01	

LOAD CASE				Tanpa Mudmat 2 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	107.24	-23334.4	537525.319	23.04	23.04
	Y Direction	-1.74	1862.4	113411.602	60.89	
30 Degree	X Direction	93.13	-27437.7	545605.028	19.89	19.89
	Y Direction	49.86	-8708.6	250158.462	28.73	
60 Degree	X Direction	54.43	-35906.9	527681.670	14.70	14.70
	Y Direction	89.23	-16852.6	250158.462	14.84	
90 Degree	X Direction	1.02	-126692.3	537525.319	4.24	4.24
	Y Direction	104.57	-19926.0	250158.462	12.55	
120 Degree	X Direction	-52.26	-55841.3	254671.749	4.56	4.56
	Y Direction	89.95	-16797.9	250158.462	14.89	
150 Degree	X Direction	-90.19	-64394.8	254671.749	3.95	3.95
	Y Direction	51.13	-8747.9	250158.462	28.60	
180 Degree	X Direction	-102.68	-67234.7	254671.749	3.79	3.79
	Y Direction	-0.7	-983.0	254671.749	259.08	
210 Degree	X Direction	-87.85	-63663.3	254671.749	4.00	4.00
	Y Direction	-51.2	12642.3	113411.602	8.97	
240 Degree	X Direction	-50.79	-55841.7	254671.749	4.56	4.56
	Y Direction	-88.36	20281.4	113411.602	5.59	
270 Degree	X Direction	0.78	-133922.1	254671.749	1.90	1.90
	Y Direction	-102.91	23149.2	113411.602	4.90	
300 Degree	X Direction	52.90	-33721.6	537525.319	15.94	5.58
	Y Direction	-90.26	20334.0	113411.602	5.58	
330 Degree	X Direction	92.78	-25479.2	537525.319	21.10	9.00
	Y Direction	-53.21	12601.7	113411.602	9.00	

Lampiran Tabel Overturning Stability Tanpa Mudmat (3 Derajat Kemiringan)

LOAD CASE				Tanpa Mudmat 3 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	42.26	-9195.4	528628.268	57.49	57.49
	Y Direction	-0.73	781.4	104514.551	133.76	
30 Degree	X Direction	35.65	-10503.1	545605.028	51.95	51.95
	Y Direction	19.31	-3372.7	250158.462	74.17	
60 Degree	X Direction	20.73	-13675.4	518784.619	37.94	37.94
	Y Direction	34.16	-6451.7	250158.462	38.77	
90 Degree	X Direction	0.27	-33536.2	528628.268	15.76	15.76
	Y Direction	40.72	-7759.3	250158.462	32.24	
120 Degree	X Direction	-20.75	-22172.0	254671.749	11.49	11.49
	Y Direction	35.42	-6614.6	250158.462	37.82	
150 Degree	X Direction	-35.33	-25225.3	254671.749	10.10	10.10
	Y Direction	20.24	-3462.9	250158.462	72.24	
180 Degree	X Direction	-40.15	-26290.2	254671.749	9.69	9.69
	Y Direction	0.42	589.8	254671.749	431.79	
210 Degree	X Direction	-34.92	-25305.9	254671.749	10.06	10.06
	Y Direction	-19.27	4758.2	104514.551	21.97	
240 Degree	X Direction	-20.31	-22330.1	254671.749	11.40	11.40
	Y Direction	-34.13	7833.9	104514.551	13.34	
270 Degree	X Direction	0.17	-29188.2	254671.749	8.73	8.73
	Y Direction	-40.24	9051.8	104514.551	11.55	
300 Degree	X Direction	21.28	-13565.1	528628.268	38.97	12.86
	Y Direction	-36.08	8128.2	104514.551	12.86	
330 Degree	X Direction	37.40	-10270.8	528628.268	51.47	20.62
	Y Direction	-21.40	5068.1	104514.551	20.62	

LOAD CASE				Tanpa Mudmat 3 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	65.83	-14324.0	528628.268	36.91	36.91
	Y Direction	-1.03	1102.5	104514.551	94.80	
30 Degree	X Direction	56.38	-16610.5	545605.028	32.85	32.85
	Y Direction	30.25	-5283.5	250158.462	47.35	
60 Degree	X Direction	32.31	-21314.5	518784.619	24.34	24.34
	Y Direction	53.35	-10076.1	250158.462	24.83	
90 Degree	X Direction	0.33	-40988.7	528628.268	12.90	12.90
	Y Direction	62.28	-11867.6	250158.462	21.08	
120 Degree	X Direction	-31.16	-33295.4	254671.749	7.65	7.65
	Y Direction	53.62	-10013.4	250158.462	24.98	
150 Degree	X Direction	-53.58	-38255.6	254671.749	6.66	6.66
	Y Direction	30.65	-5244.0	250158.462	47.70	
180 Degree	X Direction	-61.25	-40106.4	254671.749	6.35	6.35
	Y Direction	0.21	294.9	254671.749	863.59	
210 Degree	X Direction	-52.92	-38350.1	254671.749	6.64	6.64
	Y Direction	-30.12	7437.2	104514.551	14.05	
240 Degree	X Direction	-30.78	-33841.5	254671.749	7.53	7.53
	Y Direction	-52.96	12156.0	104514.551	8.60	
270 Degree	X Direction	0.24	-41206.8	254671.749	6.18	6.18
	Y Direction	-62.41	14038.9	104514.551	7.44	
300 Degree	X Direction	32.41	-20660.1	528628.268	25.59	8.40
	Y Direction	-55.25	12446.8	104514.551	8.40	
330 Degree	X Direction	57.22	-15713.7	528628.268	33.64	13.50
	Y Direction	-32.69	7742.0	104514.551	13.50	

LOAD CASE				Tanpa Mudmat 3 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	89.54	-19483.1	528628.268	27.13	27.13
	Y Direction	-1.48	1584.1	104514.551	65.98	
30 Degree	X Direction	77.53	-22841.7	545605.028	23.89	23.89
	Y Direction	41.53	-7253.7	250158.462	34.49	
60 Degree	X Direction	44.85	-29587.0	518784.619	17.53	17.53
	Y Direction	73.3	-13843.9	250158.462	18.07	
90 Degree	X Direction	1.01	-125450.3	528628.268	4.21	4.21
	Y Direction	85.23	-16240.7	250158.462	15.40	
120 Degree	X Direction	-42.93	-45872.0	254671.749	5.55	5.55
	Y Direction	74.05	-13828.6	250158.462	18.09	
150 Degree	X Direction	-74.72	-53349.4	254671.749	4.77	4.77
	Y Direction	42.22	-7223.5	250158.462	34.63	
180 Degree	X Direction	-86.06	-56352.0	254671.749	4.52	4.52
	Y Direction	-0.51	-716.2	254671.749	355.59	
210 Degree	X Direction	-73.87	-53532.2	254671.749	4.76	4.76
	Y Direction	-42.72	10548.4	104514.551	9.91	
240 Degree	X Direction	-42.20	-46397.3	254671.749	5.49	5.49
	Y Direction	-73.93	16969.3	104514.551	6.16	
270 Degree	X Direction	0.79	-135639.1	254671.749	1.88	1.88
	Y Direction	-85.72	19282.4	104514.551	5.42	
300 Degree	X Direction	43.81	-27927.1	528628.268	18.93	6.23
	Y Direction	-74.45	16772.3	104514.551	6.23	
330 Degree	X Direction	77.14	-21184.1	528628.268	24.95	10.03
	Y Direction	-44	10420.5	104514.551	10.03	

LOAD CASE				Tanpa Mudmat 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	118.65	-25817.1	528628.268	20.48	20.48
	Y Direction	-1.94	2076.5	104514.551	50.33	
30 Degree	X Direction	103.04	-30357.4	545605.028	17.97	17.97
	Y Direction	55.18	-9637.8	250158.462	25.96	
60 Degree	X Direction	60.23	-39733.1	518784.619	13.06	13.06
	Y Direction	98.78	-18656.3	250158.462	13.41	
90 Degree	X Direction	1.13	-140355.2	528628.268	3.77	3.77
	Y Direction	115.78	-22062.1	250158.462	11.34	
120 Degree	X Direction	-57.81	-61771.7	254671.749	4.12	4.12
	Y Direction	99.59	-18598.2	250158.462	13.45	
150 Degree	X Direction	-99.75	-71220.5	254671.749	3.58	3.58
	Y Direction	56.6	-9683.8	250158.462	25.83	
180 Degree	X Direction	-113.55	-74352.4	254671.749	3.43	3.43
	Y Direction	-0.78	-1095.3	254671.749	232.50	
210 Degree	X Direction	-97.14	-70395.6	254671.749	3.62	3.62
	Y Direction	-56.68	13995.5	104514.551	7.47	
240 Degree	X Direction	-56.16	-61745.8	254671.749	4.12	4.12
	Y Direction	-97.82	22452.8	104514.551	4.65	
270 Degree	X Direction	0.87	-149374.7	254671.749	1.70	1.70
	Y Direction	-113.93	25628.1	104514.551	4.08	
300 Degree	X Direction	58.52	-37304.2	528628.268	14.17	4.64
	Y Direction	-99.93	22512.5	104514.551	4.64	
330 Degree	X Direction	102.65	-28189.7	528628.268	18.75	7.49
	Y Direction	-58.92	13954.0	104514.551	7.49	

Lampiran Tabel Overturning Stability 3 Mudmat (0 Derajat Kemiringan)

LOAD CASE				3 Mudmat 0 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	32.21	-7008.6	711564.477	101.53	101.53
	Y Direction	-0.56	599.4	279705.480	466.64	
30 Degree	X Direction	27.18	-8007.7	693975.548	86.66	86.66
	Y Direction	14.61	-2551.8	259071.482	101.52	
60 Degree	X Direction	15.75	-10390.1	693975.548	66.79	53.04
	Y Direction	25.86	-4884.1	259071.482	53.04	
90 Degree	X Direction	0.11	-13662.9	711564.477	52.08	44.14
	Y Direction	30.80	-5869.0	259071.482	44.14	
120 Degree	X Direction	-15.91	-17000.3	280832.949	16.52	16.52
	Y Direction	26.84	-5012.3	259071.482	51.69	
150 Degree	X Direction	-27.09	-19342.0	280832.949	14.52	14.52
	Y Direction	15.39	-2633.1	259071.482	98.39	
180 Degree	X Direction	-30.78	-20154.7	280832.949	13.93	13.93
	Y Direction	0.35	491.5	280832.949	571.38	
210 Degree	X Direction	-26.68	-19334.5	280832.949	14.52	14.52
	Y Direction	-14.58	3600.1	279705.480	77.69	
240 Degree	X Direction	-15.45	-16986.7	280832.949	16.53	16.53
	Y Direction	-25.82	5926.5	279705.480	47.20	
270 Degree	X Direction	0.08	-13735.6	330832.949	24.09	24.09
	Y Direction	-30.47	6854.1	279705.480	40.81	
300 Degree	X Direction	16.26	-10365.1	711564.477	68.65	45.51
	Y Direction	-27.28	6145.7	279705.480	45.51	
330 Degree	X Direction	28.49	-7823.9	711564.477	90.95	72.99
	Y Direction	-16.18	3831.9	279705.480	72.99	

LOAD CASE				3 Mudmat 0 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	48.13	-10472.6	711564.477	67.95	67.95
	Y Direction	-0.77	824.2	279705.480	339.38	
30 Degree	X Direction	41.18	-12132.3	693975.548	57.20	57.20
	Y Direction	22.00	-3842.5	259071.482	67.42	
60 Degree	X Direction	23.57	-15548.9	693975.548	44.63	35.33
	Y Direction	38.83	-7333.7	259071.482	35.33	
90 Degree	X Direction	0.15	-18631.2	711564.477	38.19	29.97
	Y Direction	45.37	-8645.3	259071.482	29.97	
120 Degree	X Direction	-22.94	-24512.1	280832.949	11.46	11.46
	Y Direction	39.14	-7309.3	259071.482	35.44	
150 Degree	X Direction	-39.42	-28145.5	280832.949	9.98	9.98
	Y Direction	22.42	-3835.9	259071.482	67.54	
180 Degree	X Direction	-45.04	-29492.1	280832.949	9.52	9.52
	Y Direction	0.21	294.9	280832.949	952.30	
210 Degree	X Direction	-38.85	-28153.9	280832.949	9.97	9.97
	Y Direction	-21.91	5410.0	279705.480	51.70	
240 Degree	X Direction	-22.52	-24759.9	280832.949	11.34	11.34
	Y Direction	-38.55	8848.4	279705.480	31.61	
270 Degree	X Direction	0.24	-41206.8	330832.949	8.03	8.03
	Y Direction	-45.45	10223.8	279705.480	27.36	
300 Degree	X Direction	23.79	-15165.2	711564.477	46.92	30.85
	Y Direction	-40.24	9065.4	279705.480	30.85	
330 Degree	X Direction	41.88	-11501.1	711564.477	61.87	49.60
	Y Direction	-23.81	5638.9	279705.480	49.60	

LOAD CASE				3 Mudmat 0 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	64.16	-13960.6	711564.477	50.97	50.97
	Y Direction	-1.07	1145.3	279705.480	244.22	
30 Degree	X Direction	55.48	-16345.4	693975.548	42.46	42.46
	Y Direction	29.63	-5175.2	259071.482	50.06	
60 Degree	X Direction	32.05	-21143.0	693975.548	32.82	26.22
	Y Direction	52.31	-9879.6	259071.482	26.22	
90 Degree	X Direction	0.60	-74524.9	711564.477	9.55	9.55
	Y Direction	60.87	-11598.9	259071.482	22.34	
120 Degree	X Direction	-30.90	-33017.6	280832.949	8.51	8.51
	Y Direction	52.95	-9888.3	259071.482	26.20	
150 Degree	X Direction	-53.70	-38341.3	280832.949	7.32	7.32
	Y Direction	30.25	-5175.5	259071.482	50.06	
180 Degree	X Direction	-61.81	-40473.1	280832.949	6.94	6.94
	Y Direction	-0.28	-393.2	280832.949	714.22	
210 Degree	X Direction	-53.00	-38408.1	280832.949	7.31	7.31
	Y Direction	-30.43	7513.8	279705.480	37.23	
240 Degree	X Direction	-30.24	-33247.8	280832.949	8.45	8.45
	Y Direction	-52.72	12100.9	279705.480	23.11	
270 Degree	X Direction	0.61	-104734.0	330832.949	3.16	3.16
	Y Direction	-61.2	13766.7	279705.480	20.32	
300 Degree	X Direction	31.49	-20073.6	711564.477	35.45	23.33
	Y Direction	-53.22	11989.5	279705.480	23.33	
330 Degree	X Direction	55.34	-15197.4	711564.477	46.82	37.55
	Y Direction	-31.45	7448.3	279705.480	37.55	

LOAD CASE				3 Mudmat 0 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	83.83	-18240.6	711564.477	39.01	39.01
	Y Direction	-1.38	1477.1	279705.480	189.36	
30 Degree	X Direction	72.72	-21424.6	693975.548	32.39	32.39
	Y Direction	38.85	-6785.6	259071.482	38.18	
60 Degree	X Direction	42.44	-27997.2	693975.548	24.79	19.73
	Y Direction	69.53	-13131.9	259071.482	19.73	
90 Degree	X Direction	0.69	-85703.6	711564.477	8.30	8.30
	Y Direction	81.53	-15535.7	259071.482	16.68	
120 Degree	X Direction	-40.96	-43767.0	280832.949	6.42	6.42
	Y Direction	70.22	-13113.4	259071.482	19.76	
150 Degree	X Direction	-70.63	-50429.1	280832.949	5.57	5.57
	Y Direction	39.97	-6838.5	259071.482	37.88	
180 Degree	X Direction	-80.39	-52639.3	280832.949	5.34	5.34
	Y Direction	-0.45	-631.9	280832.949	444.41	
210 Degree	X Direction	-68.74	-49814.6	280832.949	5.64	5.64
	Y Direction	-39.86	9842.2	279705.480	28.42	
240 Degree	X Direction	-39.68	-43626.7	280832.949	6.44	6.44
	Y Direction	-68.87	15807.8	279705.480	17.69	
270 Degree	X Direction	0.67	-115035.7	330832.949	2.88	2.88
	Y Direction	-80.27	18056.4	279705.480	15.49	
300 Degree	X Direction	41.43	-26410.0	711564.477	26.94	17.63
	Y Direction	-70.44	15868.9	279705.480	17.63	
330 Degree	X Direction	72.58	-19931.9	711564.477	35.70	28.44
	Y Direction	-41.53	9835.5	279705.480	28.44	

Lampiran Tabel Overturning Stability 3 Mudmat (1 Derajat Kemiringan)

LOAD CASE				3 Mudmat 1 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	35.89	-7809.3	702469.713	89.95	89.95
	Y Direction	-0.65	695.7	270610.716	388.96	
30 Degree	X Direction	30.25	-8912.2	693975.548	77.87	77.87
	Y Direction	16.28	-2843.5	259071.482	91.11	
60 Degree	X Direction	17.53	-11564.3	684880.784	59.22	47.55
	Y Direction	28.85	-5448.8	259071.482	47.55	
90 Degree	X Direction	0.12	-14905.0	702469.713	47.13	39.51
	Y Direction	34.41	-6556.9	259071.482	39.51	
120 Degree	X Direction	-17.72	-18934.3	280832.949	14.83	14.83
	Y Direction	30.00	-5602.4	259071.482	46.24	
150 Degree	X Direction	-30.14	-21519.7	280832.949	13.05	13.05
	Y Direction	17.20	-2942.8	259071.482	88.04	
180 Degree	X Direction	-34.23	-22413.8	280832.949	12.53	12.53
	Y Direction	0.41	575.8	280832.949	487.76	
210 Degree	X Direction	-29.68	-21508.5	280832.949	13.06	13.06
	Y Direction	-16.25	4012.5	270610.716	67.44	
240 Degree	X Direction	-17.19	-18899.8	280832.949	14.86	14.86
	Y Direction	-28.82	6615.1	270610.716	40.91	
270 Degree	X Direction	0.10	-17169.5	330832.949	19.27	19.27
	Y Direction	-34.03	7654.9	270610.716	35.35	
300 Degree	X Direction	18.14	-11563.5	702469.713	60.75	39.36
	Y Direction	-30.52	6875.6	270610.716	39.36	
330 Degree	X Direction	31.78	-8727.4	702469.713	80.49	63.06
	Y Direction	-18.12	4291.3	270610.716	63.06	

LOAD CASE				3 Mudmat 1 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	54.50	-11858.7	702469.713	59.24	59.24
	Y Direction	-0.90	963.3	270610.716	280.91	
30 Degree	X Direction	46.61	-13732.1	693975.548	50.54	50.54
	Y Direction	24.92	-4352.6	259071.482	59.52	
60 Degree	X Direction	26.67	-17593.9	684880.784	38.93	31.18
	Y Direction	44.00	-8310.1	259071.482	31.18	
90 Degree	X Direction	0.17	-21115.4	702469.713	33.27	26.43
	Y Direction	51.44	-9802.0	259071.482	26.43	
120 Degree	X Direction	-25.94	-27717.6	280832.949	10.13	10.13
	Y Direction	44.37	-8286.0	259071.482	31.27	
150 Degree	X Direction	-44.55	-31808.3	280832.949	8.83	8.83
	Y Direction	25.41	-4347.4	259071.482	59.59	
180 Degree	X Direction	-50.89	-33322.7	280832.949	8.43	8.43
	Y Direction	0.25	351.1	280832.949	799.93	
210 Degree	X Direction	-43.88	-31799.0	280832.949	8.83	8.83
	Y Direction	-24.82	6128.6	270610.716	44.16	
240 Degree	X Direction	-25.45	-27981.3	280832.949	10.04	10.04
	Y Direction	-43.69	10028.2	270610.716	26.98	
270 Degree	X Direction	0.28	-48074.6	330832.949	6.88	6.88
	Y Direction	-51.54	11593.7	270610.716	23.34	
300 Degree	X Direction	26.93	-17166.8	702469.713	40.92	26.31
	Y Direction	-45.66	10286.4	270610.716	26.31	
330 Degree	X Direction	47.43	-13025.2	702469.713	53.93	42.27
	Y Direction	-27.03	6401.5	270610.716	42.27	

LOAD CASE				3 Mudmat 1 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	73.22	-15932.0	702469.713	44.09	44.09
	Y Direction	-1.25	1337.9	270610.716	202.26	
30 Degree	X Direction	63.32	-18655.2	693975.548	37.20	37.20
	Y Direction	33.83	-5908.8	259071.482	43.85	
60 Degree	X Direction	36.57	-24124.8	684880.784	28.39	22.96
	Y Direction	59.75	-11284.8	259071.482	22.96	
90 Degree	X Direction	0.71	-88187.8	702469.713	7.97	7.97
	Y Direction	69.55	-13252.9	259071.482	19.55	
120 Degree	X Direction	-35.23	-37644.3	280832.949	7.46	7.46
	Y Direction	60.5	-11298.2	259071.482	22.93	
150 Degree	X Direction	-61.24	-43724.8	280832.949	6.42	6.42
	Y Direction	34.55	-5911.2	259071.482	43.83	
180 Degree	X Direction	-70.47	-46143.7	280832.949	6.09	6.09
	Y Direction	-0.32	-449.4	280832.949	624.95	
210 Degree	X Direction	-60.42	-43785.3	280832.949	6.41	6.41
	Y Direction	-34.77	8585.4	270610.716	31.52	
240 Degree	X Direction	-34.47	-37898.5	280832.949	7.41	7.41
	Y Direction	-60.24	13827.0	270610.716	19.57	
270 Degree	X Direction	0.71	-121903.5	330832.949	2.71	2.71
	Y Direction	-69.94	15732.7	270610.716	17.20	
300 Degree	X Direction	35.92	-22897.6	702469.713	30.68	19.75
	Y Direction	-60.81	13699.4	270610.716	19.75	
330 Degree	X Direction	63.15	-17342.2	702469.713	40.51	31.78
	Y Direction	-35.96	8516.4	270610.716	31.78	

LOAD CASE				3 Mudmat 1 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	96.21	-20934.4	702469.713	33.56	33.56
	Y Direction	-1.62	1734.0	270610.716	156.06	
30 Degree	X Direction	83.46	-24588.8	693975.548	28.22	28.22
	Y Direction	44.6	-7789.9	259071.482	33.26	
60 Degree	X Direction	48.71	-32133.4	684880.784	21.31	17.17
	Y Direction	79.87	-15084.8	259071.482	17.17	
90 Degree	X Direction	0.80	-99366.5	702469.713	7.07	7.07
	Y Direction	93.68	-17850.9	259071.482	14.51	
120 Degree	X Direction	-46.99	-50210.2	280832.949	5.59	5.59
	Y Direction	80.67	-15064.9	259071.482	17.20	
150 Degree	X Direction	-81.02	-57847.5	280832.949	4.85	4.85
	Y Direction	45.91	-7854.8	259071.482	32.98	
180 Degree	X Direction	-92.19	-60365.9	280832.949	4.65	4.65
	Y Direction	-0.53	-744.3	280832.949	377.33	
210 Degree	X Direction	-78.80	-57104.9	280832.949	4.92	4.92
	Y Direction	-45.79	11306.5	270610.716	23.93	
240 Degree	X Direction	-45.49	-50014.6	280832.949	5.62	5.62
	Y Direction	-79.11	18158.2	270610.716	14.90	
270 Degree	X Direction	0.78	-133922.1	330832.949	2.47	2.47
	Y Direction	-92.21	20742.3	270610.716	13.05	
300 Degree	X Direction	47.53	-30298.5	702469.713	23.18	14.84
	Y Direction	-80.93	18232.1	270610.716	14.84	
330 Degree	X Direction	83.29	-22873.0	702469.713	30.71	23.93
	Y Direction	-47.74	11306.2	270610.716	23.93	

Lampiran Tabel Overturning Stability 3 Mudmat (2 Derajat Kemiringan)

LOAD CASE				3 Mudmat 2 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	39.31	-8553.5	693416.737	81.07	81.07
	Y Direction	-0.74	792.1	261557.740	330.22	
30 Degree	X Direction	33.10	-9751.8	693975.548	71.16	71.16
	Y Direction	17.83	-3114.2	259071.482	83.19	
60 Degree	X Direction	19.18	-12652.8	675827.808	53.41	43.37
	Y Direction	31.63	-5973.9	259071.482	43.37	
90 Degree	X Direction	0.14	-17389.1	693416.737	39.88	36.01
	Y Direction	37.76	-7195.2	259071.482	36.01	
120 Degree	X Direction	-19.40	-20729.5	280832.949	13.55	13.55
	Y Direction	32.92	-6147.7	259071.482	42.14	
150 Degree	X Direction	-32.98	-23547.4	280832.949	11.93	11.93
	Y Direction	18.88	-3230.2	259071.482	80.20	
180 Degree	X Direction	-37.42	-24502.6	280832.949	11.46	11.46
	Y Direction	0.47	660.0	280832.949	425.50	
210 Degree	X Direction	-32.44	-23508.7	280832.949	11.95	11.95
	Y Direction	-17.79	4392.7	261557.740	59.54	
240 Degree	X Direction	-18.79	-20658.9	280832.949	13.59	13.59
	Y Direction	-31.60	7253.2	261557.740	36.06	
270 Degree	X Direction	0.11	-18886.5	330832.949	17.52	17.52
	Y Direction	-37.33	8397.2	261557.740	31.15	
300 Degree	X Direction	19.87	-12666.3	693416.737	54.74	34.64
	Y Direction	-33.52	7551.5	261557.740	34.64	
330 Degree	X Direction	34.83	-9565.0	693416.737	72.50	55.47
	Y Direction	-19.91	4715.3	261557.740	55.47	

LOAD CASE				3 Mudmat 2 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	60.39	-13140.3	693416.737	52.77	52.77
	Y Direction	-1.01	1081.1	261557.740	241.95	
30 Degree	X Direction	51.64	-15214.0	693975.548	45.61	45.61
	Y Direction	27.63	-4825.9	259071.482	53.68	
60 Degree	X Direction	29.54	-19487.2	675827.808	34.68	28.11
	Y Direction	48.80	-9216.7	259071.482	28.11	
90 Degree	X Direction	0.19	-23599.6	693416.737	29.38	23.83
	Y Direction	57.06	-10872.9	259071.482	23.83	
120 Degree	X Direction	-28.71	-30677.5	280832.949	9.15	9.15
	Y Direction	49.22	-9191.7	259071.482	28.19	
150 Degree	X Direction	-49.31	-35206.9	280832.949	7.98	7.98
	Y Direction	28.18	-4821.4	259071.482	53.73	
180 Degree	X Direction	-56.30	-36865.2	280832.949	7.62	7.62
	Y Direction	0.28	393.2	280832.949	714.22	
210 Degree	X Direction	-48.55	-35183.3	280832.949	7.98	7.98
	Y Direction	-27.51	6792.8	261557.740	38.51	
240 Degree	X Direction	-28.17	-30971.9	280832.949	9.07	9.07
	Y Direction	-48.45	11120.8	261557.740	23.52	
270 Degree	X Direction	0.32	-54942.4	330832.949	6.02	6.02
	Y Direction	-57.17	12860.2	261557.740	20.34	
300 Degree	X Direction	29.83	-19015.4	693416.737	36.47	22.91
	Y Direction	-50.68	11417.3	261557.740	22.91	
330 Degree	X Direction	52.56	-14434.0	693416.737	48.04	36.80
	Y Direction	-30.01	7107.3	261557.740	36.80	

LOAD CASE				3 Mudmat 2 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	81.61	-17757.6	693416.737	39.05	39.05
	Y Direction	-1.42	1519.9	261557.740	172.09	
30 Degree	X Direction	70.57	-20791.1	693975.548	33.38	33.38
	Y Direction	37.72	-6588.2	259071.482	39.32	
60 Degree	X Direction	40.76	-26888.9	675827.808	25.13	20.58
	Y Direction	66.65	-12588.0	259071.482	20.58	
90 Degree	X Direction	0.80	-99366.5	693416.737	6.98	6.98
	Y Direction	77.59	-14784.9	259071.482	17.52	
120 Degree	X Direction	-39.24	-41929.1	280832.949	6.70	6.70
	Y Direction	67.5	-12605.4	259071.482	20.55	
150 Degree	X Direction	-68.22	-48708.4	280832.949	5.77	5.77
	Y Direction	38.54	-6593.9	259071.482	39.29	
180 Degree	X Direction	-78.50	-51401.7	280832.949	5.46	5.46
	Y Direction	-0.37	-519.6	280832.949	540.49	
210 Degree	X Direction	-67.29	-48763.8	280832.949	5.76	5.76
	Y Direction	-38.78	9575.6	261557.740	27.32	
240 Degree	X Direction	-38.39	-42208.4	280832.949	6.65	6.65
	Y Direction	-67.21	15426.8	261557.740	16.95	
270 Degree	X Direction	0.81	-139073.0	330832.949	2.38	2.38
	Y Direction	-78.02	17550.3	261557.740	14.90	
300 Degree	X Direction	40.03	-25517.5	693416.737	27.17	17.11
	Y Direction	-67.85	15285.4	261557.740	17.11	
330 Degree	X Direction	70.38	-19327.7	693416.737	35.88	27.52
	Y Direction	-40.13	9504.0	261557.740	27.52	

LOAD CASE				3 Mudmat 2 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	107.66	-23425.8	693416.737	29.60	29.60
	Y Direction	-1.83	1958.8	261557.740	133.53	
30 Degree	X Direction	93.40	-27517.3	693975.548	25.22	25.22
	Y Direction	49.93	-8720.8	259071.482	29.71	
60 Degree	X Direction	54.52	-35966.2	675827.808	18.79	15.33
	Y Direction	89.45	-16894.2	259071.482	15.33	
90 Degree	X Direction	0.91	-113029.4	693416.737	6.13	6.13
	Y Direction	104.93	-19994.6	259071.482	12.96	
120 Degree	X Direction	-52.56	-56161.9	280832.949	5.00	5.00
	Y Direction	90.36	-16874.5	259071.482	15.35	
150 Degree	X Direction	-90.63	-64709.0	280832.949	4.34	4.34
	Y Direction	51.41	-8795.8	259071.482	29.45	
180 Degree	X Direction	-103.11	-67516.3	280832.949	4.16	4.16
	Y Direction	-0.6	-842.6	280832.949	333.30	
210 Degree	X Direction	-88.12	-63858.9	280832.949	4.40	4.40
	Y Direction	-51.27	12659.6	261557.740	20.66	
240 Degree	X Direction	-50.88	-55940.7	280832.949	5.02	5.02
	Y Direction	-88.59	20334.2	261557.740	12.86	
270 Degree	X Direction	0.88	-151091.6	330832.949	2.19	2.19
	Y Direction	-103.27	23230.2	261557.740	11.26	
300 Degree	X Direction	53.19	-33906.5	693416.737	20.45	12.81
	Y Direction	-90.65	20421.8	261557.740	12.81	
330 Degree	X Direction	93.21	-25597.3	693416.737	27.09	20.65
	Y Direction	-53.48	12665.6	261557.740	20.65	

Lampiran Tabel Overturning Stability 3 Mudmat (3 Derajat Kemiringan)

LOAD CASE				3 Mudmat 3 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	42.72	-9295.5	684408.303	73.63	73.63
	Y Direction	-0.83	888.4	252549.306	284.28	
30 Degree	X Direction	35.94	-10588.5	693975.548	65.54	65.54
	Y Direction	19.38	-3384.9	259071.482	76.54	
60 Degree	X Direction	20.83	-13741.3	666819.374	48.53	39.88
	Y Direction	34.40	-6497.0	259071.482	39.88	
90 Degree	X Direction	0.16	-19873.3	684408.303	34.44	33.07
	Y Direction	41.11	-7833.6	259071.482	33.07	
120 Degree	X Direction	-21.07	-22513.9	280832.949	12.47	12.47
	Y Direction	35.85	-6694.9	259071.482	38.70	
150 Degree	X Direction	-35.81	-25568.0	280832.949	10.98	10.98
	Y Direction	20.55	-3515.9	259071.482	73.68	
180 Degree	X Direction	-40.61	-26591.4	280832.949	10.56	10.56
	Y Direction	0.52	730.2	280832.949	384.58	
210 Degree	X Direction	-35.21	-25516.0	280832.949	11.01	11.01
	Y Direction	-19.34	4775.4	252549.306	52.89	
240 Degree	X Direction	-20.40	-22429.0	280832.949	12.52	12.52
	Y Direction	-34.38	7891.3	252549.306	32.00	
270 Degree	X Direction	0.12	-20603.4	330832.949	16.06	16.06
	Y Direction	-40.63	9139.5	252549.306	27.63	
300 Degree	X Direction	21.60	-13769.1	684408.303	49.71	30.70
	Y Direction	-36.51	8225.1	252549.306	30.70	
330 Degree	X Direction	37.88	-10402.6	684408.303	65.79	49.12
	Y Direction	-21.71	5141.6	252549.306	49.12	

LOAD CASE				3 Mudmat 3 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	66.29	-14424.1	684408.303	47.45	47.45
	Y Direction	-1.13	1209.5	252549.306	208.80	
30 Degree	X Direction	56.67	-16696.0	693975.548	41.57	41.57
	Y Direction	30.33	-5297.5	259071.482	48.90	
60 Degree	X Direction	32.41	-21380.5	666819.374	31.19	25.60
	Y Direction	53.59	-10121.4	259071.482	25.60	
90 Degree	X Direction	0.22	-27325.8	684408.303	25.05	21.69
	Y Direction	62.67	-11941.9	259071.482	21.69	
120 Degree	X Direction	-31.48	-33637.3	280832.949	8.35	8.35
	Y Direction	54.06	-10095.6	259071.482	25.66	
150 Degree	X Direction	-54.06	-38598.3	280832.949	7.28	7.28
	Y Direction	30.95	-5295.3	259071.482	48.92	
180 Degree	X Direction	-61.71	-40407.6	280832.949	6.95	6.95
	Y Direction	0.32	449.4	280832.949	624.95	
210 Degree	X Direction	-53.21	-38560.3	280832.949	7.28	7.28
	Y Direction	-30.19	7454.5	252549.306	33.88	
240 Degree	X Direction	-30.88	-33951.4	280832.949	8.27	8.27
	Y Direction	-53.21	12213.4	252549.306	20.68	
270 Degree	X Direction	0.36	-61810.2	330832.949	5.35	5.35
	Y Direction	-62.80	14126.6	252549.306	17.88	
300 Degree	X Direction	32.74	-20870.4	684408.303	32.79	20.13
	Y Direction	-55.69	12546.0	252549.306	20.13	
330 Degree	X Direction	57.70	-15845.5	684408.303	43.19	32.31
	Y Direction	-33.00	7815.4	252549.306	32.31	

LOAD CASE				3 Mudmat 3 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	90.00	-19583.2	684408.303	34.95	34.95
	Y Direction	-1.58	1691.2	252549.306	149.33	
30 Degree	X Direction	77.82	-22927.1	693975.548	30.27	30.27
	Y Direction	41.61	-7267.7	259071.482	35.65	
60 Degree	X Direction	44.95	-29653.0	666819.374	22.49	18.65
	Y Direction	73.54	-13889.3	259071.482	18.65	
90 Degree	X Direction	0.89	-110545.3	684408.303	6.19	6.19
	Y Direction	85.62	-16315.1	259071.482	15.88	
120 Degree	X Direction	-43.25	-46213.9	280832.949	6.08	6.08
	Y Direction	74.49	-13910.8	259071.482	18.62	
150 Degree	X Direction	-75.20	-53692.1	280832.949	5.23	5.23
	Y Direction	42.53	-7276.5	259071.482	35.60	
180 Degree	X Direction	-86.52	-56653.2	280832.949	4.96	4.96
	Y Direction	-0.41	-575.8	280832.949	487.76	
210 Degree	X Direction	-74.16	-53742.4	280832.949	5.23	5.23
	Y Direction	-42.8	10568.2	252549.306	23.90	
240 Degree	X Direction	-42.30	-46507.3	280832.949	6.04	6.04
	Y Direction	-74.17	17024.3	252549.306	14.83	
270 Degree	X Direction	0.90	-154525.5	330832.949	2.14	2.14
	Y Direction	-86.11	19370.1	252549.306	13.04	
300 Degree	X Direction	44.13	-28131.1	684408.303	24.33	14.97
	Y Direction	-74.88	16869.1	252549.306	14.97	
330 Degree	X Direction	77.61	-21313.2	684408.303	32.11	24.07
	Y Direction	-44.3	10491.5	252549.306	24.07	

LOAD CASE				3 Mudmat 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	119.12	-25919.4	684408.303	26.41	26.41
	Y Direction	-2.05	2194.2	252549.306	115.10	
30 Degree	X Direction	103.34	-30445.8	693975.548	22.79	22.79
	Y Direction	55.25	-9650.0	259071.482	26.85	
60 Degree	X Direction	60.33	-39799.0	666819.374	16.75	13.85
	Y Direction	99.03	-18703.5	259071.482	13.85	
90 Degree	X Direction	1.01	-125450.3	684408.303	5.46	5.46
	Y Direction	116.18	-22138.3	259071.482	11.70	
120 Degree	X Direction	-58.14	-62124.3	280832.949	4.52	4.52
	Y Direction	100.04	-18682.2	259071.482	13.87	
150 Degree	X Direction	-100.25	-71577.5	280832.949	3.92	3.92
	Y Direction	56.92	-9738.5	259071.482	26.60	
180 Degree	X Direction	-114.03	-74666.7	280832.949	3.76	3.76
	Y Direction	-0.67	-940.9	280832.949	298.48	
210 Degree	X Direction	-97.44	-70613.0	280832.949	3.98	3.98
	Y Direction	-56.76	14015.2	252549.306	18.02	
240 Degree	X Direction	-56.26	-61855.8	280832.949	4.54	4.54
	Y Direction	-98.07	22510.1	252549.306	11.22	
270 Degree	X Direction	0.99	-169978.1	330832.949	1.95	1.95
	Y Direction	-114.33	25718.1	252549.306	9.82	
300 Degree	X Direction	58.84	-37508.1	684408.303	18.25	11.17
	Y Direction	-100.37	22611.6	252549.306	11.17	
330 Degree	X Direction	103.12	-28318.7	684408.303	24.17	18.00
	Y Direction	-59.23	14027.4	252549.306	18.00	

Lampiran Tabel Overturning Stability Full Mudmat (0 Derajat Kemiringan)

LOAD CASE				Full Mudmat 0 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	32.28	-7023.8	742013.757	105.64	105.64
	Y Direction	-0.55	588.7	308170.440	523.48	
30 Degree	X Direction	27.25	-8028.3	722440.508	89.99	89.99
	Y Direction	14.62	-2553.5	261819.542	102.53	
60 Degree	X Direction	15.78	-10409.9	722440.508	69.40	53.63
	Y Direction	25.85	-4882.2	261819.542	53.63	
90 Degree	X Direction	0.12	-14905.0	742013.757	49.78	44.65
	Y Direction	30.77	-5863.3	261819.542	44.65	
120 Degree	X Direction	-15.93	-17021.7	286164.769	16.81	16.81
	Y Direction	26.82	-5008.6	261819.542	52.27	
150 Degree	X Direction	-27.14	-19377.7	286164.769	14.77	14.77
	Y Direction	15.39	-2633.1	261819.542	99.43	
180 Degree	X Direction	-30.85	-20200.5	286164.769	14.17	14.17
	Y Direction	0.34	477.5	286164.769	599.35	
210 Degree	X Direction	-26.75	-19385.2	286164.769	14.76	14.76
	Y Direction	-14.59	3602.6	308170.440	85.54	
240 Degree	X Direction	-15.48	-17019.7	286164.769	16.81	16.81
	Y Direction	-25.82	5926.5	308170.440	52.00	
270 Degree	X Direction	0.07	-12018.7	336164.769	27.97	27.97
	Y Direction	-30.45	6849.6	308170.440	44.99	
300 Degree	X Direction	16.28	-10377.8	742013.757	71.50	50.18
	Y Direction	-27.26	6141.2	308170.440	50.18	
330 Degree	X Direction	28.54	-7837.6	742013.757	94.67	80.47
	Y Direction	-16.17	3829.5	308170.440	80.47	

LOAD CASE				Full Mudmat 0 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	48.20	-10487.9	742013.757	70.75	70.75
	Y Direction	-0.76	813.5	308170.440	378.83	
30 Degree	X Direction	41.25	-12153.0	722440.508	59.45	59.45
	Y Direction	22.02	-3846.0	261819.542	68.08	
60 Degree	X Direction	23.61	-15575.3	722440.508	46.38	35.71
	Y Direction	38.82	-7331.8	261819.542	35.71	
90 Degree	X Direction	0.16	-19873.3	742013.757	37.34	30.30
	Y Direction	45.34	-8639.6	261819.542	30.30	
120 Degree	X Direction	-22.96	-24533.4	286164.769	11.66	11.66
	Y Direction	39.12	-7305.6	261819.542	35.84	
150 Degree	X Direction	-39.47	-28181.2	286164.769	10.15	10.15
	Y Direction	22.42	-3835.9	261819.542	68.26	
180 Degree	X Direction	-45.11	-29538.0	286164.769	9.69	9.69
	Y Direction	0.20	280.9	286164.769	1018.90	
210 Degree	X Direction	-38.92	-28204.6	286164.769	10.15	10.15
	Y Direction	-21.93	5415.0	308170.440	56.91	
240 Degree	X Direction	-22.56	-24803.9	286164.769	11.54	11.54
	Y Direction	-38.55	8848.4	308170.440	34.83	
270 Degree	X Direction	0.23	-39489.9	336164.769	8.51	8.51
	Y Direction	-45.43	10219.3	308170.440	30.16	
300 Degree	X Direction	23.81	-15177.9	742013.757	48.89	34.01
	Y Direction	-40.22	9060.9	308170.440	34.01	
330 Degree	X Direction	41.93	-11514.8	742013.757	64.44	54.67
	Y Direction	-23.80	5636.5	308170.440	54.67	

LOAD CASE				Full Mudmat 0 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	64.23	-13975.9	742013.757	53.09	53.09
	Y Direction	-1.06	1134.6	308170.440	271.62	
30 Degree	X Direction	55.55	-16366.0	722440.508	44.14	44.14
	Y Direction	29.64	-5177.0	261819.542	50.57	
60 Degree	X Direction	32.08	-21162.8	722440.508	34.14	26.51
	Y Direction	52.3	-9877.7	261819.542	26.51	
90 Degree	X Direction	0.62	-77009.1	742013.757	9.64	9.64
	Y Direction	60.85	-11595.1	261819.542	22.58	
120 Degree	X Direction	-30.92	-33038.9	286164.769	8.66	8.66
	Y Direction	52.93	-9884.5	261819.542	26.49	
150 Degree	X Direction	-53.76	-38384.1	286164.769	7.46	7.46
	Y Direction	30.24	-5173.8	261819.542	50.60	
180 Degree	X Direction	-61.88	-40518.9	286164.769	7.06	7.06
	Y Direction	-0.29	-407.2	286164.769	702.69	
210 Degree	X Direction	-53.07	-38458.8	286164.769	7.44	7.44
	Y Direction	-30.44	7516.3	308170.440	41.00	
240 Degree	X Direction	-30.28	-33291.7	286164.769	8.60	8.60
	Y Direction	-52.72	12100.9	308170.440	25.47	
270 Degree	X Direction	0.60	-103017.0	336164.769	3.26	3.26
	Y Direction	-61.18	13762.2	308170.440	22.39	
300 Degree	X Direction	31.51	-20086.4	742013.757	36.94	25.71
	Y Direction	-53.2	11985.0	308170.440	25.71	
330 Degree	X Direction	55.39	-15211.2	742013.757	48.78	41.39
	Y Direction	-31.44	7445.9	308170.440	41.39	

LOAD CASE				Full Mudmat 0 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	83.91	-18258.0	742013.757	40.64	40.64
	Y Direction	-1.38	1477.1	308170.440	208.63	
30 Degree	X Direction	72.80	-21448.1	722440.508	33.68	33.68
	Y Direction	38.86	-6787.3	261819.542	38.57	
60 Degree	X Direction	42.48	-28023.6	722440.508	25.78	19.94
	Y Direction	69.53	-13131.9	261819.542	19.94	
90 Degree	X Direction	0.70	-86945.7	742013.757	8.53	8.53
	Y Direction	81.5	-15530.0	261819.542	16.86	
120 Degree	X Direction	-40.98	-43788.3	286164.769	6.54	6.54
	Y Direction	70.2	-13109.7	261819.542	19.97	
150 Degree	X Direction	-70.69	-50472.0	286164.769	5.67	5.67
	Y Direction	39.96	-6836.8	261819.542	38.30	
180 Degree	X Direction	-80.47	-52691.6	286164.769	5.43	5.43
	Y Direction	-0.46	-646.0	286164.769	443.00	
210 Degree	X Direction	-68.81	-49865.3	286164.769	5.74	5.74
	Y Direction	-39.88	9847.2	308170.440	31.30	
240 Degree	X Direction	-39.72	-43670.7	286164.769	6.55	6.55
	Y Direction	-68.86	15805.5	308170.440	19.50	
270 Degree	X Direction	0.66	-113318.7	336164.769	2.97	2.97
	Y Direction	-80.25	18051.9	308170.440	17.07	
300 Degree	X Direction	41.45	-26422.7	742013.757	28.08	19.43
	Y Direction	-70.42	15864.4	308170.440	19.43	
330 Degree	X Direction	72.63	-19945.6	742013.757	37.20	31.33
	Y Direction	-41.53	9835.5	308170.440	31.33	

Lampiran Tabel Overturning Stability Full Mudmat (1 Derajat Kemiringan)

LOAD CASE				Full Mudmat 1 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	35.98	-7828.9	732855.628	93.61	93.61
	Y Direction	-0.64	685.0	299012.311	436.50	
30 Degree	X Direction	30.33	-8935.7	722440.508	80.85	80.85
	Y Direction	16.30	-2847.0	261819.542	91.96	
60 Degree	X Direction	17.57	-11590.7	713282.379	61.54	48.05
	Y Direction	28.85	-5448.8	261819.542	48.05	
90 Degree	X Direction	0.14	-17389.1	732855.628	42.14	39.97
	Y Direction	34.38	-6551.2	261819.542	39.97	
120 Degree	X Direction	-17.74	-18955.7	286164.769	15.10	15.10
	Y Direction	29.98	-5598.7	261819.542	46.76	
150 Degree	X Direction	-30.20	-21562.5	286164.769	13.27	13.27
	Y Direction	17.19	-2941.1	261819.542	89.02	
180 Degree	X Direction	-34.31	-22466.1	286164.769	12.74	12.74
	Y Direction	0.40	561.7	286164.769	509.45	
210 Degree	X Direction	-29.75	-21559.3	286164.769	13.27	13.27
	Y Direction	-16.26	4014.9	299012.311	74.48	
240 Degree	X Direction	-17.23	-18943.7	286164.769	15.11	15.11
	Y Direction	-28.82	6615.1	299012.311	45.20	
270 Degree	X Direction	0.09	-15452.6	336164.769	21.75	21.75
	Y Direction	-34.01	7650.4	299012.311	39.08	
300 Degree	X Direction	18.16	-11576.3	732855.628	63.31	43.52
	Y Direction	-30.50	6871.1	299012.311	43.52	
330 Degree	X Direction	31.84	-8743.9	732855.628	83.81	69.72
	Y Direction	-18.11	4289.0	299012.311	69.72	

LOAD CASE				Full Mudmat 1 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	54.58	-11876.1	732855.628	61.71	61.71
	Y Direction	-0.89	952.6	299012.311	313.88	
30 Degree	X Direction	46.69	-13755.7	722440.508	52.52	52.52
	Y Direction	24.94	-4356.1	261819.542	60.10	
60 Degree	X Direction	26.71	-17620.3	713282.379	40.48	31.51
	Y Direction	44.00	-8310.1	261819.542	31.51	
90 Degree	X Direction	0.18	-22357.5	732855.628	32.78	26.73
	Y Direction	51.41	-9796.3	261819.542	26.73	
120 Degree	X Direction	-25.96	-27739.0	286164.769	10.32	10.32
	Y Direction	44.35	-8282.2	261819.542	31.61	
150 Degree	X Direction	-44.61	-31851.1	286164.769	8.98	8.98
	Y Direction	25.41	-4347.4	261819.542	60.22	
180 Degree	X Direction	-50.97	-33375.1	286164.769	8.57	8.57
	Y Direction	0.24	337.0	286164.769	849.08	
210 Degree	X Direction	-43.96	-31857.0	286164.769	8.98	8.98
	Y Direction	-24.83	6131.0	299012.311	48.77	
240 Degree	X Direction	-25.50	-28036.3	286164.769	10.21	10.21
	Y Direction	-43.68	10025.9	299012.311	29.82	
270 Degree	X Direction	0.27	-46357.7	336164.769	7.25	7.25
	Y Direction	-51.51	11587.0	299012.311	25.81	
300 Degree	X Direction	26.95	-17179.5	732855.628	42.66	29.08
	Y Direction	-45.64	10281.9	299012.311	29.08	
330 Degree	X Direction	47.49	-13041.7	732855.628	56.19	46.73
	Y Direction	-27.02	6399.1	299012.311	46.73	

LOAD CASE				Full Mudmat 1 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	73.30	-15949.4	732855.628	45.95	45.95
	Y Direction	-1.24	1327.2	299012.311	225.29	
30 Degree	X Direction	63.40	-18678.7	722440.508	38.68	38.68
	Y Direction	33.84	-5910.5	261819.542	44.30	
60 Degree	X Direction	36.61	-24151.2	713282.379	29.53	23.20
	Y Direction	59.75	-11284.8	261819.542	23.20	
90 Degree	X Direction	0.72	-89429.9	732855.628	8.19	8.19
	Y Direction	69.52	-13247.2	261819.542	19.76	
120 Degree	X Direction	-35.25	-37665.7	286164.769	7.60	7.60
	Y Direction	60.48	-11294.5	261819.542	23.18	
150 Degree	X Direction	-61.30	-43767.6	286164.769	6.54	6.54
	Y Direction	34.54	-5909.5	261819.542	44.30	
180 Degree	X Direction	-70.56	-46202.6	286164.769	6.19	6.19
	Y Direction	-0.33	-463.4	286164.769	617.51	
210 Degree	X Direction	-60.50	-43843.2	286164.769	6.53	6.53
	Y Direction	-34.78	8587.9	299012.311	34.82	
240 Degree	X Direction	-34.51	-37942.5	286164.769	7.54	7.54
	Y Direction	-60.24	13827.0	299012.311	21.63	
270 Degree	X Direction	0.70	-120186.5	336164.769	2.80	2.80
	Y Direction	-69.91	15726.0	299012.311	19.01	
300 Degree	X Direction	35.95	-22916.7	732855.628	31.98	21.83
	Y Direction	-60.79	13694.9	299012.311	21.83	
330 Degree	X Direction	63.21	-17358.7	732855.628	42.22	35.12
	Y Direction	-35.95	8514.0	299012.311	35.12	

LOAD CASE				Full Mudmat 1 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	96.30	-20954.0	732855.628	34.97	34.97
	Y Direction	-1.61	1723.3	299012.311	173.51	
30 Degree	X Direction	83.54	-24612.3	722440.508	29.35	29.35
	Y Direction	44.61	-7791.6	261819.542	33.60	
60 Degree	X Direction	48.76	-32166.4	713282.379	22.17	17.36
	Y Direction	79.87	-15084.8	261819.542	17.36	
90 Degree	X Direction	0.81	-100608.6	732855.628	7.28	7.28
	Y Direction	93.65	-17845.2	261819.542	14.67	
120 Degree	X Direction	-47.01	-50231.6	286164.769	5.70	5.70
	Y Direction	80.65	-15061.2	261819.542	17.38	
150 Degree	X Direction	-81.08	-57890.3	286164.769	4.94	4.94
	Y Direction	45.91	-7854.8	261819.542	33.33	
180 Degree	X Direction	-92.28	-60424.8	286164.769	4.74	4.74
	Y Direction	-0.54	-758.3	286164.769	377.37	
210 Degree	X Direction	-78.88	-57162.9	286164.769	5.01	5.01
	Y Direction	-45.8	11309.0	299012.311	26.44	
240 Degree	X Direction	-45.54	-50069.5	286164.769	5.72	5.72
	Y Direction	-79.1	18155.9	299012.311	16.47	
270 Degree	X Direction	0.77	-132205.2	336164.769	2.54	2.54
	Y Direction	-92.18	20735.5	299012.311	14.42	
300 Degree	X Direction	47.56	-30317.6	732855.628	24.17	16.40
	Y Direction	-80.91	18227.6	299012.311	16.40	
330 Degree	X Direction	83.35	-22889.5	732855.628	32.02	26.45
	Y Direction	-47.73	11303.9	299012.311	26.45	

Lampiran Tabel Overturning Stability Full Mudmat (2 Derajat Kemiringan)

LOAD CASE				Full Mudmat 2 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	39.41	-8575.3	723739.578	84.40	84.40
	Y Direction	-0.73	781.4	289896.261	371.01	
30 Degree	X Direction	33.19	-9778.4	722440.508	73.88	73.88
	Y Direction	17.85	-3117.7	261819.542	83.98	
60 Degree	X Direction	19.23	-12685.8	704166.329	55.51	43.84
	Y Direction	31.62	-5972.0	261819.542	43.84	
90 Degree	X Direction	0.16	-19873.3	723739.578	36.42	36.42
	Y Direction	37.73	-7189.5	261819.542	36.42	
120 Degree	X Direction	-19.42	-20750.8	286164.769	13.79	13.79
	Y Direction	32.90	-6144.0	261819.542	42.61	
150 Degree	X Direction	-33.04	-23590.2	286164.769	12.13	12.13
	Y Direction	18.87	-3228.5	261819.542	81.10	
180 Degree	X Direction	-37.52	-24568.0	286164.769	11.65	11.65
	Y Direction	0.45	631.9	286164.769	452.84	
210 Degree	X Direction	-32.53	-23573.9	286164.769	12.14	12.14
	Y Direction	-17.81	4397.7	289896.261	65.92	
240 Degree	X Direction	-18.84	-20713.9	286164.769	13.82	13.82
	Y Direction	-31.59	7250.9	289896.261	39.98	
270 Degree	X Direction	0.10	-17169.5	336164.769	19.58	19.58
	Y Direction	-37.30	8390.5	289896.261	34.55	
300 Degree	X Direction	19.89	-12679.1	723739.578	57.08	38.42
	Y Direction	-33.49	7544.7	289896.261	38.42	
330 Degree	X Direction	34.90	-9584.2	723739.578	75.51	61.51
	Y Direction	-19.90	4712.9	289896.261	61.51	

LOAD CASE				Full Mudmat 2 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	60.49	-13162.1	723739.578	54.99	54.99
	Y Direction	-1.00	1070.4	289896.261	270.84	
30 Degree	X Direction	51.73	-15240.6	722440.508	47.40	47.40
	Y Direction	27.64	-4827.6	261819.542	54.23	
60 Degree	X Direction	29.59	-19520.2	704166.329	36.07	28.41
	Y Direction	48.79	-9214.8	261819.542	28.41	
90 Degree	X Direction	0.21	-26083.7	723739.578	27.75	24.10
	Y Direction	57.02	-10865.3	261819.542	24.10	
120 Degree	X Direction	-28.73	-30698.8	286164.769	9.32	9.32
	Y Direction	49.19	-9186.1	261819.542	28.50	
150 Degree	X Direction	-49.37	-35249.7	286164.769	8.12	8.12
	Y Direction	28.17	-4819.7	261819.542	54.32	
180 Degree	X Direction	-56.40	-36930.6	286164.769	7.75	7.75
	Y Direction	0.27	379.2	286164.769	754.74	
210 Degree	X Direction	-48.64	-35248.5	286164.769	8.12	8.12
	Y Direction	-27.52	6795.3	289896.261	42.66	
240 Degree	X Direction	-28.21	-31015.8	286164.769	9.23	9.23
	Y Direction	-48.44	11118.5	289896.261	26.07	
270 Degree	X Direction	0.31	-53225.5	336164.769	6.32	6.32
	Y Direction	-57.14	12853.4	289896.261	22.55	
300 Degree	X Direction	29.86	-19034.6	723739.578	38.02	25.41
	Y Direction	-50.65	11410.5	289896.261	25.41	
330 Degree	X Direction	52.63	-14453.2	723739.578	50.07	40.80
	Y Direction	-30.00	7104.9	289896.261	40.80	

LOAD CASE				Full Mudmat 2 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	81.71	-17779.3	723739.578	40.71	40.71
	Y Direction	-1.4	1498.5	289896.261	193.46	
30 Degree	X Direction	70.66	-20817.7	722440.508	34.70	34.70
	Y Direction	37.74	-6591.7	261819.542	39.72	
60 Degree	X Direction	40.81	-26921.9	704166.329	26.16	20.80
	Y Direction	66.64	-12586.1	261819.542	20.80	
90 Degree	X Direction	0.81	-100608.6	723739.578	7.19	7.19
	Y Direction	77.55	-14777.3	261819.542	17.72	
120 Degree	X Direction	-39.27	-41961.1	286164.769	6.82	6.82
	Y Direction	67.47	-12599.8	261819.542	20.78	
150 Degree	X Direction	-68.29	-48758.4	286164.769	5.87	5.87
	Y Direction	38.53	-6592.2	261819.542	39.72	
180 Degree	X Direction	-78.60	-51467.2	286164.769	5.56	5.56
	Y Direction	-0.38	-533.6	286164.769	536.26	
210 Degree	X Direction	-67.38	-48829.0	286164.769	5.86	5.86
	Y Direction	-38.8	9580.5	289896.261	30.26	
240 Degree	X Direction	-38.43	-42252.4	286164.769	6.77	6.77
	Y Direction	-67.2	15424.5	289896.261	18.79	
270 Degree	X Direction	0.80	-137356.0	336164.769	2.45	2.45
	Y Direction	-77.99	17543.5	289896.261	16.52	
300 Degree	X Direction	40.05	-25530.3	723739.578	28.35	18.97
	Y Direction	-67.82	15278.6	289896.261	18.97	
330 Degree	X Direction	70.45	-19346.9	723739.578	37.41	30.51
	Y Direction	-40.12	9501.6	289896.261	30.51	

LOAD CASE				Full Mudmat 2 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	107.77	-23449.8	723739.578	30.86	30.86
	Y Direction	-1.82	1948.1	289896.261	148.81	
30 Degree	X Direction	93.49	-27543.8	722440.508	26.23	26.23
	Y Direction	49.94	-8722.6	261819.542	30.02	
60 Degree	X Direction	54.57	-35999.2	704166.329	19.56	15.50
	Y Direction	89.45	-16894.2	261819.542	15.50	
90 Degree	X Direction	0.92	-114271.5	723739.578	6.33	6.33
	Y Direction	104.9	-19988.9	261819.542	13.10	
120 Degree	X Direction	-52.59	-56194.0	286164.769	5.09	5.09
	Y Direction	90.33	-16868.9	261819.542	15.52	
150 Degree	X Direction	-90.70	-64758.9	286164.769	4.42	4.42
	Y Direction	51.41	-8795.8	261819.542	29.77	
180 Degree	X Direction	-103.21	-67581.8	286164.769	4.23	4.23
	Y Direction	-0.61	-856.6	286164.769	334.06	
210 Degree	X Direction	-88.21	-63924.1	286164.769	4.48	4.48
	Y Direction	-51.29	12664.5	289896.261	22.89	
240 Degree	X Direction	-50.93	-55995.6	286164.769	5.11	5.11
	Y Direction	-88.58	20331.9	289896.261	14.26	
270 Degree	X Direction	0.87	-149374.7	336164.769	2.25	2.25
	Y Direction	-103.24	23223.4	289896.261	12.48	
300 Degree	X Direction	53.21	-33919.2	723739.578	21.34	14.20
	Y Direction	-90.62	20415.1	289896.261	14.20	
330 Degree	X Direction	93.28	-25616.5	723739.578	28.25	22.89
	Y Direction	-53.47	12663.3	289896.261	22.89	

Lampiran Tabel Overturning Stability Full Mudmat (3 Derajat Kemiringan)

LOAD CASE				Full Mudmat 3 Degree		
H=3 ft |T=2.97 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	42.83	-9319.4	714668.381	76.69	76.69
	Y Direction	-0.82	877.7	280825.064	319.96	
30 Degree	X Direction	36.04	-10618.0	722440.508	68.04	68.04
	Y Direction	19.40	-3388.4	261819.542	77.27	
60 Degree	X Direction	20.89	-13780.9	695095.132	50.44	40.31
	Y Direction	34.39	-6495.1	261819.542	40.31	
90 Degree	X Direction	0.17	-21115.4	714668.381	33.85	33.45
	Y Direction	41.08	-7827.9	261819.542	33.45	
120 Degree	X Direction	-21.10	-22546.0	286164.769	12.69	12.69
	Y Direction	35.82	-6689.3	261819.542	39.14	
150 Degree	X Direction	-35.88	-25618.0	286164.769	11.17	11.17
	Y Direction	20.54	-3514.2	261819.542	74.50	
180 Degree	X Direction	-40.72	-26663.4	286164.769	10.73	10.73
	Y Direction	0.51	716.2	286164.769	399.57	
210 Degree	X Direction	-35.31	-25588.5	286164.769	11.18	11.18
	Y Direction	-19.36	4780.4	280825.064	58.75	
240 Degree	X Direction	-20.46	-22495.0	286164.769	12.72	12.72
	Y Direction	-34.37	7889.0	280825.064	35.60	
270 Degree	X Direction	0.11	-18886.5	336164.769	17.80	17.80
	Y Direction	-40.60	9132.8	280825.064	30.75	
300 Degree	X Direction	21.63	-13788.3	714668.381	51.83	34.17
	Y Direction	-36.48	8218.3	280825.064	34.17	
330 Degree	X Direction	37.95	-10421.8	714668.381	68.57	54.64
	Y Direction	-21.70	5139.2	280825.064	54.64	

LOAD CASE				Full Mudmat 3 Degree		
H=6 ft |T=4.36 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	66.40	-14448.0	714668.381	49.46	49.46
	Y Direction	-1.12	1198.8	280825.064	234.26	
30 Degree	X Direction	56.77	-16725.4	722440.508	43.19	43.19
	Y Direction	30.35	-5301.0	261819.542	49.39	
60 Degree	X Direction	32.46	-21413.5	695095.132	32.46	25.87
	Y Direction	53.59	-10121.4	261819.542	25.87	
90 Degree	X Direction	0.23	-28567.9	714668.381	25.02	21.93
	Y Direction	62.64	-11936.2	261819.542	21.93	
120 Degree	X Direction	-31.51	-33669.4	286164.769	8.50	8.50
	Y Direction	54.03	-10090.0	261819.542	25.95	
150 Degree	X Direction	-54.13	-38648.3	286164.769	7.40	7.40
	Y Direction	30.94	-5293.6	261819.542	49.46	
180 Degree	X Direction	-61.82	-40479.6	286164.769	7.07	7.07
	Y Direction	0.30	421.3	286164.769	679.27	
210 Degree	X Direction	-53.31	-38632.8	286164.769	7.41	7.41
	Y Direction	-30.21	7459.5	280825.064	37.65	
240 Degree	X Direction	-30.93	-34006.4	286164.769	8.42	8.42
	Y Direction	-53.20	12211.1	280825.064	23.00	
270 Degree	X Direction	0.34	-58376.3	336164.769	5.76	5.76
	Y Direction	-62.76	14117.6	280825.064	19.89	
300 Degree	X Direction	32.76	-20883.2	714668.381	34.22	22.40
	Y Direction	-55.66	12539.2	280825.064	22.40	
330 Degree	X Direction	57.78	-15867.5	714668.381	45.04	35.94
	Y Direction	-32.99	7813.0	280825.064	35.94	

LOAD CASE				Full Mudmat 3 Degree		
H=9 ft |T=5.24 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	90.11	-19607.1	714668.381	36.45	36.45
	Y Direction	-1.57	1680.5	280825.064	167.11	
30 Degree	X Direction	77.93	-22959.5	722440.508	31.47	31.47
	Y Direction	41.63	-7271.1	261819.542	36.01	
60 Degree	X Direction	45.01	-29692.6	695095.132	23.41	18.85
	Y Direction	73.54	-13889.3	261819.542	18.85	
90 Degree	X Direction	0.91	-113029.4	714668.381	6.32	6.32
	Y Direction	85.58	-16307.4	261819.542	16.06	
120 Degree	X Direction	-43.28	-46245.9	286164.769	6.19	6.19
	Y Direction	74.46	-13905.2	261819.542	18.83	
150 Degree	X Direction	-75.27	-53742.1	286164.769	5.32	5.32
	Y Direction	42.52	-7274.8	261819.542	35.99	
180 Degree	X Direction	-86.63	-56725.2	286164.769	5.04	5.04
	Y Direction	-0.42	-589.8	286164.769	485.19	
210 Degree	X Direction	-74.26	-53814.8	286164.769	5.32	5.32
	Y Direction	-42.82	10573.1	280825.064	26.56	
240 Degree	X Direction	-42.35	-46562.2	286164.769	6.15	6.15
	Y Direction	-74.17	17024.3	280825.064	16.50	
270 Degree	X Direction	0.89	-152808.6	336164.769	2.20	2.20
	Y Direction	-86.07	19361.1	280825.064	14.50	
300 Degree	X Direction	44.16	-28150.2	714668.381	25.39	16.65
	Y Direction	-74.86	16864.6	280825.064	16.65	
330 Degree	X Direction	77.69	-21335.2	714668.381	33.50	26.77
	Y Direction	-44.3	10491.5	280825.064	26.77	

LOAD CASE				Full Mudmat 3 Degree		
H=12 ft |T=5.82 s						
Arah Gelombang Datang	Direction	Wave Force (kips)	Overturning Moment (kips.ft)	Resisting Moment (kips.ft)	Safety Factor	Min Safety Factor
0 Degree	X Direction	119.23	-25943.4	714668.381	27.55	27.55
	Y Direction	-2.04	2183.5	280825.064	128.61	
30 Degree	X Direction	103.45	-30478.2	722440.508	23.70	23.70
	Y Direction	55.27	-9653.5	261819.542	27.12	
60 Degree	X Direction	60.39	-39838.6	695095.132	17.45	14.00
	Y Direction	99.02	-18701.6	261819.542	14.00	
90 Degree	X Direction	1.03	-127934.4	714668.381	5.59	5.59
	Y Direction	116.14	-22130.7	261819.542	11.83	
120 Degree	X Direction	-58.17	-62156.3	286164.769	4.60	4.60
	Y Direction	100.01	-18676.6	261819.542	14.02	
150 Degree	X Direction	-100.33	-71634.7	286164.769	3.99	3.99
	Y Direction	56.91	-9736.8	261819.542	26.89	
180 Degree	X Direction	-114.14	-74738.7	286164.769	3.83	3.83
	Y Direction	-0.68	-954.9	286164.769	299.68	
210 Degree	X Direction	-97.54	-70685.4	286164.769	4.05	4.05
	Y Direction	-56.78	14020.1	280825.064	20.03	
240 Degree	X Direction	-56.32	-61921.7	286164.769	4.62	4.62
	Y Direction	-98.06	22507.8	280825.064	12.48	
270 Degree	X Direction	0.97	-166544.2	336164.769	2.02	2.02
	Y Direction	-114.29	25709.1	280825.064	10.92	
300 Degree	X Direction	58.87	-37527.3	714668.381	19.04	12.42
	Y Direction	-100.34	22604.8	280825.064	12.42	
330 Degree	X Direction	103.20	-28340.7	714668.381	25.22	20.02
	Y Direction	-59.22	14025.0	280825.064	20.02	

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OPTIONS      EN       SDAA   4 2   DC  C
CODE  AA             1.000
SECT
SECT 2H        WF                                  4.921 0.3549.843 0.236
SECT CD5       PGB                                 36.0001.02431.4960.551     .500
SECT CH300     CHL                                 11.8113.5430.354 0.610
SECT CONE      CON                                 30.0001.25048.000
SECT H200      WF                                  3.937 0.2757.874 0.177
SECT H250      WF                                  4.921 0.3549.843 0.236
SECT H300      WF                                  11.8100.59111.8100.3941.500
SECT MD1       PLG                                 11.8112.00023.5000.472
SECT U610229   WF                                  9.016 0.68124.0160.437
SECT U610299   WF                                  9.016 0.68124.0160.437
SECT W300      WF                                  5.906 0.35411.8110.256
SECT W400200   WF                                  7.874 0.51115.7480.3151.500
SECT W600      WF                                  11.8110.78723.6220.5900.800
SECT W800      WF                                  15.7481.02331.4960.551
GRUP
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GRUP BL0           6.625 0.432 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP BL1          12.750 0.688 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP BL2          10.750 0.500 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP BL3           6.625 0.432 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP BL4           4.500 0.337 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP BL5           1.900 0.145 29.0011.2050.00 9    1.001.00     0.500 490.00
GRUP BLX W8X31                 29.0011.2036.00 9    1.001.00           490.00
GRUP BLY           6.625 0.432 29.0011.2036.00 9    1.001.00     0.500 490.00
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GRUP BRC          12.750 0.625 29.0011.2036.00 1    1.001.00     0.500 490.00
*********************************************************************************
GRUP CD1 W800                  29.0011.2050.00 1    1.001.00           490.00
GRUP CD2 CD5                   29.0011.2050.00 1    1.001.00           490.00
GRUP CD3 CD5                   29.0011.2050.00 1    1.001.00           490.00
GRUP CD4 CD5                   29.0011.2050.00 1    1.001.00           490.002.75
GRUP CD4 W800                  29.0011.2050.00 1    1.001.00           490.00
GRUP CD5 W800                  29.0011.2050.00 1    1.001.00           490.00
GRUP CD5 CD5                   29.0011.2050.00 1    1.001.00           490.002.75
GRUP CD6 U610229               29.0011.2050.00 1    1.001.00           490.00
GRUP CDA CH300                 29.0011.2036.00 1    1.001.00           490.00
GRUP CDB 2H                    29.0011.2036.00 1    1.001.00           490.00
GRUP CDC W300                  29.0011.2050.00 1    1.001.00           490.00
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GRUP CL1          30.000 1.250 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP CL1          30.000 1.500 29.0011.2050.00 1    1.001.00     0.500 490.002.08
GRUP CL3          30.000 1.500 29.0011.2050.00 1    1.001.00     0.500 490.003.00
GRUP CL3 CONE                  29.0011.2050.00 1    1.001.00           490.003.00
GRUP CL3          48.000 1.250 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP CL3          48.000 1.500 29.0011.2050.00 1    1.001.00     0.500 490.003.25
GRUP CL4          30.000 1.500 29.0011.2050.00 1    1.001.00     0.500 490.003.00
GRUP CL4          30.000 1.250 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP CL4          30.000 1.500 29.0011.2050.00 1    1.001.00     0.500 490.003.25
*********************************************************************************
GRUP CND          30.000 1.000 29.0011.2050.00 9    1.001.00     0.500N490.00
*********************************************************************************
GRUP CO2          48.000 1.500 29.0011.2050.00 1    1.001.00     0.500 490.001.00
GRUP CO2          48.000 1.250 29.0011.2050.00 1    1.001.00     0.500 490.00
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GRUP D01          18.000 0.750 29.0011.2050.00 1    .800.800     0.500 490.00
GRUP D02          22.000 0.500 29.0011.2050.00 1    .800.800     0.500 490.00
GRUP D03          22.000 1.000 29.0011.2050.00 1    .800.800     0.500 490.00
GRUP D04          18.000 0.750 29.0011.2050.00 1    .800.800     0.500 490.00
GRUP D05          18.000 0.500 29.0011.2050.00 1    .800.800     0.500 490.00
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GRUP DL1          56.000 2.000 29.0011.2052.00 1    1.001.00     0.500 490.00
GRUP DLA          55.500 1.750 29.0011.2061.06 1    1.001.00     0.500 489.991.00
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 66  GRUP DLA         56.000 2.000 29.0011.2061.06 1    1.001.00     0.500 490.00
 67  ********************************************************************************
 68  GRUP DSP         30.000 1.250 29.0011.2050.00 1    1.001.00     0.500 490.00
 69  GRUP DUM          8.625 0.500 10.0011.2050.00 9    1.001.00     0.500 1.00-3
 70  ********************************************************************************
 71  GRUP EA1         39.500 1.250 29.0011.2050.00 1    1.001.00     0.500 490.00
 72  GRUP ESC H250                 29.0011.2036.00 1    1.001.00           490.00
 73  ********************************************************************************
 74  GRUP GD1         34.000 0.750 29.0011.2050.00 9    1.001.00     0.500F490.00
 75  GRUP GD2         33.500 0.750 29.0011.2050.00 9    1.001.00     0.500F490.00
 76  ********************************************************************************
 77  GRUP H01         20.000 0.750 29.0011.2050.00 1    .800.800     0.500 490.00
 78  GRUP H01         20.000 0.500 29.0011.2050.00 1    .800.800     0.500 490.007.29
 79  GRUP H02         20.000 0.500 29.0011.2050.00 1    .800.800     0.500 490.007.29
 80  GRUP H02         20.000 0.750 29.0011.2050.00 1    .800.800     0.500 490.00
 81  GRUP H03         20.000 0.750 29.0011.2050.00 1    .800.800     0.500 490.00
 82  GRUP H04         18.000 0.500 29.0011.2050.00 1    .800.800     0.500 490.00
 83  GRUP H05         14.000 0.375 29.0011.2050.00 1    .800.800     0.500 490.00
 84  GRUP HG1          6.625 0.322 29.0011.2050.00 1    1.001.00     0.500 490.00
 85  GRUP HG2          8.625 0.375 29.0011.2050.00 1    1.001.00     0.500 490.00
 86  ********************************************************************************
 87  GRUP LP1         36.000 1.500 29.0011.2050.00 1    1.001.00     0.500F490.00
 88  GRUP LP1         36.000 1.250 29.0011.2050.00 1    1.001.00     0.500F490.0015.0
 89  GRUP LP2         36.000 1.250 29.0011.2050.00 1    1.001.00     0.500F490.006.82
 90  GRUP LP2         36.000 1.250 29.0011.2050.00 1    1.001.00     0.500F490.00
 91  GRUP LP3         36.000 1.250 29.0011.2050.00 1    1.001.00     0.500F490.00
 92  GRUP LP4         36.000 1.250 29.0011.2050.00 1    1.001.00     0.500F490.00
 93  GRUP LP5         36.000 1.250 29.0011.2050.00 1    1.001.00     0.500F490.00
 94  ********************************************************************************
 95  GRUP MD1 MD1                  29.0011.2050.00 1    1.001.00           490.002.00
 96  GRUP MD1 U610299              29.0011.2050.00 1    1.001.00           490.00
 97  GRUP MD2 W600                 29.0011.2036.00 1    1.001.00           490.00
 98  GRUP MD3 H300                 29.0011.2050.00 1    1.001.00           490.00
 99  GRUP MD4 U610299              29.0011.2050.00 1    1.001.00           490.00
100  GRUP MD5 W400200              29.0011.2050.00 1    1.001.00           490.00
101  GRUP MD6 U610299              29.0011.2050.00 1    1.001.00           490.00
102  GRUP MD6 MD1                  29.0011.2050.00 1    1.001.00           490.002.00
103  GRUP MD9 MD1                  29.0011.2050.00 1    1.001.00           490.00
104  GRUP MDA CH300                29.0011.2036.00 1    1.001.00           490.00
105  GRUP MDB H250                 29.0011.2036.00 1    1.001.00           490.00
106  GRUP MDC H250                 29.0011.2036.00 1    1.001.00           490.00
107  ********************************************************************************
108  GRUP MZ1         12.750 0.750 29.0011.2050.00 1    1.001.00     0.500 490.00
109  GRUP MZ2          8.625 0.322 29.0011.2050.00 1    1.001.00     0.500 490.00
110  GRUP MZA CH300                29.0011.2036.00 1    1.001.00           490.00
111  GRUP MZB W8X21                29.0011.2050.00 1    1.001.00           490.00
112  ********************************************************************************
113  GRUP PJ0         42.000 2.000 29.0011.2052.00 1    1.001.00     0.500F490.00
114  GRUP PJ1         42.000 2.000 29.0011.2052.00 1    1.001.00     0.500F490.006.16
115  GRUP PJ1         39.000 0.500 29.0011.2052.00 1    1.001.00     0.500F490.00
116  GRUP PJ1         42.000 2.000 29.0011.2052.00 1    1.001.00     0.500F490.004.16
117  GRUP PJ2         42.000 2.000 29.0011.2052.00 1    1.001.00     0.500F490.005.58
118  GRUP PJ2         39.000 0.500 29.0011.2052.00 1    1.001.00     0.500F490.00
119  GRUP PJ2         42.000 2.000 29.0011.2052.00 1    1.001.00     0.500F490.003.83
120  GRUP PJ3         42.000 2.000 29.0011.2050.00 1    1.001.00     0.500F490.002.33
121  GRUP PJ3         39.000 0.500 29.0011.2060.77 1    1.001.00     0.500F490.00
122  GRUP PJ3         40.000 1.000 29.0011.2060.77 1    1.001.00     0.500F490.00.515
123  GRUP PJ3         39.500 0.750 29.0011.2050.00 1    1.001.00     0.500F490.00.773
124  GRUP PJ4         39.500 0.750 29.0011.2050.00 1    1.001.00     0.500F490.00
125  GRUP PJ5         39.500 0.750 29.0011.2050.00 1    1.001.00     0.500F490.00
126  GRUP PJ5         41.500 1.750 29.0011.2052.00 1    1.001.00     0.500F490.001.00
127  GRUP PJ6         41.500 1.750 29.0011.2052.00 1    1.001.00     0.500F490.00
128  ********************************************************************************
129  GRUP PL1         56.000 2.000 29.0011.2050.00 1    1.001.00     0.500F490.0056.0
130  GRUP PL1         56.000 1.500 29.0011.2050.00 1    1.001.00     0.500F490.00
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GRUP PL2          56.000 1.500 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP PL3          56.000 1.500 29.0011.2050.00 1    1.001.00     0.500F490.0035.0
GRUP PL3          56.000 2.000 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP PL4          56.000 2.000 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP PL5          60.500 4.250 29.0011.2061.06 1    1.001.00     0.500F490.001.50
GRUP PL5          55.500 1.750 29.0011.2061.06 1    1.001.00     0.500F490.00
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GRUP R4            4.000 0.318 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP R4A           4.000 0.318 29.0011.2036.00 9    1.001.00     0.500 663.00
GRUP R6            6.625 0.500 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP R6A           6.625 0.500 29.0011.2036.00 9    1.001.00     0.500 595.00
GRUP R8            8.625 0.500 29.0011.2036.00 9    1.001.00     0.500 490.00
GRUP R8A           8.625 0.500 29.0011.2036.00 9    1.001.00     0.500 591.00
GRUP RG            6.389 0.314 29.0011.2050.00 9    1.001.00     0.500 490.00
GRUP RG1          10.514 0.382 29.0011.2050.00 9    1.001.00     0.500 490.00
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GRUP SC1          10.750 0.500 29.0011.2050.00 1    1.001.00           490.00
GRUP SC2           8.625 0.375 29.0011.2050.00 1    1.001.00     0.500 490.00
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GRUP SL0          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL1          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL1          65.000 2.750 29.0011.2050.00 1    1.001.00     0.500F490.002.50
GRUP SL2          65.000 2.750 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP SL3          65.000 2.750 29.0011.2050.00 1    1.001.00     0.500F490.002.75
GRUP SL3          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL4          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL5          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.008.75
GRUP SL5          65.000 2.750 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP SL6          65.000 2.750 29.0011.2050.00 1    1.001.00     0.500F490.003.83
GRUP SL6          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL7          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL8          61.000 0.750 29.0011.2052.00 1    1.001.00     0.500F490.006.00
GRUP SL8          60.500 0.500 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL9          60.500 0.500 29.0011.2052.00 1    1.001.00     0.500F490.00
GRUP SL9          61.500 2.250 29.0011.2050.00 1    1.001.00     0.500F490.001.00
GRUP SLA          61.500 2.250 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP SLV           5.000 0.500 29.0011.2036.00 1    1.001.00     0.500 1.00-4
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GRUP SM0          25.250 0.500 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP SM1          25.250 0.500 29.0011.2050.00 1    1.001.00     0.500F490.006.00
GRUP SM1          24.750 0.250 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP SM2          24.750 0.250 29.0011.2050.00 1    1.001.00     0.500F490.00
GRUP SM3          24.750 0.250 29.0011.2050.00 1    1.001.00     0.500F490.002.75
GRUP SM3          25.250 0.500 29.0011.2050.00 1    1.001.00     0.500F490.00
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GRUP SP1          14.000 0.750 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SP2          13.500 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SP3          13.500 0.250 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SP5          14.000 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
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GRUP SR1           8.625 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SR2           8.625 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SR3           8.625 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SRA           8.125 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SRB           8.125 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SRC           8.125 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
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GRUP SS1          14.000 0.375 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP SS2          17.500 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
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GRUP VN1           8.625 0.750 29.0011.2050.00 1    1.001.00     0.500 490.00
GRUP VN2          10.750 0.500 29.0011.2050.00 1    1.001.00     0.500 490.00
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GRUP WB1          30.000 1.000 29.0011.2036.00 9    1.001.00     0.500F1.00-4
GRUP WB2          30.000 1.000 29.0011.2050.00 9    1.001.00     0.500F1.00-4
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197  MEMBER B069B080 BL0
198  MEMBER1502 B101 BL1
199  MEMBER OFFSETS                    -14.06 8.32323.900
200  MEMBER1502 B102 BL1
201  MEMBER OFFSETS                    14.059 8.32323.900
202  MEMBER1503 B089 BL1
203  MEMBER OFFSETS                    -8.319-14.0623.905
204  MEMBER1503 B094 BL1
205  MEMBER OFFSETS                    -8.31914.06223.905
206  MEMBER B001B005 BL1   001000
207  MEMBER B002B004 BL1   001000
208  MEMBER B004B019 BL1
209  MEMBER B005B020 BL1
210  MEMBER B019B034 BL1
211  MEMBER B020B035 BL1
212  MEMBER B034B050 BL1
213  MEMBER B035B051 BL1
214  MEMBER B050B066 BL1
215  MEMBER B051B067 BL1
216  MEMBER B066B084 BL1
217  MEMBER B067B083 BL1
218  MEMBER B083B085 BL1
219  MEMBER B084B086 BL1
220  MEMBER B085B087 BL1
221  MEMBER B086B088 BL1
222  MEMBER B087B082 BL1
223  MEMBER B088B081 BL1
224  MEMBER B089B001 BL1
225  MEMBER B094B002 BL1
226  MEMBER B101B501 BL1
227  MEMBER B102B502 BL1
228  MEMBER B105B107 BL1
229  MEMBER B106B108 BL1
230  MEMBER B107B109 BL1
231  MEMBER B108B110 BL1
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233  MEMBER B110B103 BL1
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238  MEMBER B519B534 BL1
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240  MEMBER B534B550 BL1
241  MEMBER B535B551 BL1
242  MEMBER B550B106 BL1
243  MEMBER B551B105 BL1
244  MEMBER1602 B550 BL2
245  MEMBER OFFSETS                     7.86518.220 6.292-2.427-5.623-1.942
246  MEMBER1602 B551 BL2
247  MEMBER OFFSETS                    -7.86518.220 6.292 2.428-5.623-1.942
248  MEMBER1B066703  BL2
249  MEMBER OFFSETS                     5.760-2.082      -20.04 7.245
250  MEMBER1B067703  BL2
251  MEMBER OFFSETS                     5.760 2.082      -20.04-7.245
252  MEMBER1B003B004 BL3
253  MEMBER OFFSETS                          -3.062             6.125
254  MEMBER1B003B007 BL3
255  MEMBER OFFSETS                                      4.330
256  MEMBER1B004B005 BL3
257  MEMBER OFFSETS                          -6.125             6.125
258  MEMBER1B004B011 BL3
259  MEMBER OFFSETS                    -6.125             3.125
260  MEMBER1B005B006 BL3
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261  MEMBER OFFSETS                        -6.125             3.062
262  MEMBER1B005B013 BL3
263  MEMBER OFFSETS                  -6.125             3.125
264  MEMBER1B006B017 BL3
265  MEMBER OFFSETS                                     4.331
266  MEMBER B008B007 BL3
267  MEMBER1B009B008 BL3
268  MEMBER OFFSETS                   3.125 3.126
269  MEMBER1B011B019 BL3
270  MEMBER OFFSETS                   2.325       2.088-6.125      -5.501
271  MEMBER1B013B020 BL3
272  MEMBER OFFSETS                   2.325       2.088-6.125      -5.501
273  MEMBER1B015B016 BL3
274  MEMBER OFFSETS                   3.125-3.125
275  MEMBER B016B017 BL3
276  MEMBER1B018B003 BL3
277  MEMBER OFFSETS                                                3.062
278  MEMBER1B018B019 BL3
279  MEMBER OFFSETS                        -3.062             6.125
280  MEMBER1B018B022 BL3
281  MEMBER OFFSETS                  -3.062             4.330
282  MEMBER1B019B020 BL3
283  MEMBER OFFSETS                        -6.125             6.125
284  MEMBER1B019B026 BL3
285  MEMBER OFFSETS                  -6.125             3.125
286  MEMBER1B020B021 BL3
287  MEMBER OFFSETS                        -6.125             3.062
288  MEMBER1B020B028 BL3
289  MEMBER OFFSETS                  -6.125             3.125
290  MEMBER1B021B006 BL3
291  MEMBER OFFSETS                                                3.062
292  MEMBER1B021B032 BL3
293  MEMBER OFFSETS                  -3.062             4.331
294  MEMBER1B023B008 BL3
295  MEMBER OFFSETS                                                3.062
296  MEMBER1B023B022 BL3
297  MEMBER OFFSETS                   2.165 2.166
298  MEMBER1B024B023 BL3
299  MEMBER OFFSETS                   3.125 3.126      -2.165-2.166
300  MEMBER1B026B034 BL3
301  MEMBER OFFSETS                   2.325       2.088-6.125      -5.499
302  MEMBER1B028B035 BL3
303  MEMBER OFFSETS                   2.325       2.088-6.125      -5.499
304  MEMBER1B030B031 BL3
305  MEMBER OFFSETS                   3.125-3.125
306  MEMBER1B031B016 BL3
307  MEMBER OFFSETS                            -3.062             3.062
308  MEMBER B031B032 BL3
309  MEMBER B033B018 BL3
310  MEMBER1B033B034 BL3
311  MEMBER OFFSETS                        -3.062             6.125
312  MEMBER1B034B035 BL3
313  MEMBER OFFSETS                        -6.125             6.125
314  MEMBER1B035B036 BL3
315  MEMBER OFFSETS                        -6.125             3.062
316  MEMBER B036B021 BL3
317  MEMBER1B037B033 BL3
318  MEMBER OFFSETS                   4.330             -3.062
319  MEMBER B038B023 BL3
320  MEMBER1B038B037 BL3
321  MEMBER OFFSETS                   2.165 2.166
322  MEMBER1B039B038 BL3
323  MEMBER OFFSETS                   3.125 3.126      -2.165-2.166
324  MEMBER1B041B034 BL3
325  MEMBER OFFSETS                   3.125             -6.125
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326  MEMBER1B041B050 BL3
327  MEMBER OFFSETS                    2.325       2.088-6.125      -5.501
328  MEMBER1B043B035 BL3
329  MEMBER OFFSETS                    3.125            -6.125
330  MEMBER1B043B051 BL3
331  MEMBER OFFSETS                    2.325       2.088-6.125      -5.501
332  MEMBER1B045B046 BL3
333  MEMBER OFFSETS                    3.125-3.125
334  MEMBER1B046B031 BL3
335  MEMBER OFFSETS                           -3.062             3.062
336  MEMBER1B046B047 BL3
337  MEMBER OFFSETS                                  -3.062 3.062
338  MEMBER1B047B036 BL3
339  MEMBER OFFSETS                                  -3.062
340  MEMBER B048B033 BL3
341  MEMBER1B048B049 BL3
342  MEMBER OFFSETS                         -3.062
343  MEMBER1B049B050 BL3
344  MEMBER OFFSETS                                          6.125
345  MEMBER1B050B051 BL3
346  MEMBER OFFSETS                         -6.125           6.125
347  MEMBER1B051B052 BL3
348  MEMBER OFFSETS                         -6.125           3.062
349  MEMBER B052B036 BL3
350  MEMBER1B053B048 BL3
351  MEMBER OFFSETS                    4.330            -3.062
352  MEMBER B054B038 BL3
353  MEMBER1B054B053 BL3
354  MEMBER OFFSETS                    2.165 2.166
355  MEMBER1B055B054 BL3
356  MEMBER OFFSETS                    3.125 3.126      -2.165-2.166
357  MEMBER1B057B050 BL3
358  MEMBER OFFSETS                    3.125            -6.125
359  MEMBER1B057B066 BL3
360  MEMBER OFFSETS                    2.665       1.632-6.125      -3.750
361  MEMBER1B059B051 BL3
362  MEMBER OFFSETS                    3.125            -6.125
363  MEMBER1B059B067 BL3
364  MEMBER OFFSETS                    2.665       1.632-6.125      -3.750
365  MEMBER1B061B062 BL3
366  MEMBER OFFSETS                    3.125-3.125
367  MEMBER1B062B046 BL3
368  MEMBER OFFSETS                           -3.062             3.062
369  MEMBER1B062B063 BL3
370  MEMBER OFFSETS                                  -3.062 3.062
371  MEMBER1B063B052 BL3
372  MEMBER OFFSETS                                  -3.062
373  MEMBER1B064B048 BL3
374  MEMBER OFFSETS                           -3.062
375  MEMBER B064B065 BL3
376  MEMBER1B064B069 BL3
377  MEMBER OFFSETS                  -3.062
378  MEMBER B064B080 BL3
379  MEMBER B064B096 BL3
380  MEMBER1B065B066 BL3
381  MEMBER OFFSETS                                          6.125
382  MEMBER1B066B067 BL3
383  MEMBER OFFSETS                         -6.125           6.125
384  MEMBER1B066B073 BL3
385  MEMBER OFFSETS                  -6.125             3.125
386  MEMBER1B067B068 BL3
387  MEMBER OFFSETS                         -6.125           3.062
388  MEMBER1B067B075 BL3
389  MEMBER OFFSETS                  -6.125             3.125
390  MEMBER1B067B090 BL3
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391  MEMBER OFFSETS                    6.125
392  MEMBER B068B052 BL3
393  MEMBER1B068B079 BL3
394  MEMBER OFFSETS                  -3.062            4.331
395  MEMBER B068B091 BL3
396  MEMBER B068B092 BL3
397  MEMBER1B069B070 BL3
398  MEMBER OFFSETS                  -3.061-3.062
399  MEMBER1B070B054 BL3
400  MEMBER OFFSETS                           -3.062
401  MEMBER1B071B070 BL3
402  MEMBER OFFSETS                   3.125 3.126
403  MEMBER1B077B078 BL3
404  MEMBER OFFSETS                   3.125-3.125
405  MEMBER1B078B062 BL3
406  MEMBER OFFSETS                           -3.062             3.062
407  MEMBER B078B079 BL3
408  MEMBER B080B095 BL3
409  MEMBER B090B091 BL3
410  MEMBER B091B093 BL3
411  MEMBER B092B093 BL3
412  MEMBER B095B097 BL3
413  MEMBER B096B095 BL3
414  MEMBER B096B098 BL3
415  MEMBER B098B099 BL3
416  MEMBER B099B097 BL3
417  MEMBER1B503B504 BL3
418  MEMBER OFFSETS                  -3.062            6.125
419  MEMBER1B503B507 BL3
420  MEMBER OFFSETS                                      -4.331
421  MEMBER1B504B505 BL3
422  MEMBER OFFSETS                  -6.125            6.125
423  MEMBER1B504B511 BL3
424  MEMBER OFFSETS                         6.125        -3.062
425  MEMBER1B505B506 BL3
426  MEMBER OFFSETS                  -6.125            3.062
427  MEMBER1B505B513 BL3
428  MEMBER OFFSETS                         6.125        -3.062
429  MEMBER1B506B517 BL3
430  MEMBER OFFSETS                                      -4.331
431  MEMBER B507B508 BL3
432  MEMBER1B508B509 BL3
433  MEMBER OFFSETS                                    3.063-3.063
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436  MEMBER B512B511 BL3
437  MEMBER B513B512 BL3
438  MEMBER1B513B520 BL3
439  MEMBER OFFSETS                       -2.278 2.046       6.125-5.501
440  MEMBER B514B513 BL3
441  MEMBER1B515B514 BL3
442  MEMBER OFFSETS                    4.331
443  MEMBER B515B516 BL3
444  MEMBER B516B517 BL3
445  MEMBER1B518B503 BL3
446  MEMBER OFFSETS                                                3.062
447  MEMBER1B518B519 BL3
448  MEMBER OFFSETS                  -3.062            6.125
449  MEMBER1B518B522 BL3
450  MEMBER OFFSETS                         3.062        -4.331
451  MEMBER1B519B511 BL3
452  MEMBER OFFSETS                         6.125-5.501      -2.278 2.046
453  MEMBER1B519B520 BL3
454  MEMBER OFFSETS                  -6.125            6.125
455  MEMBER1B519B526 BL3
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456  MEMBER OFFSETS                          6.125            -3.062
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458  MEMBER OFFSETS                 -6.125            3.062
459  MEMBER1B520B528 BL3
460  MEMBER OFFSETS                          6.125            -3.062
461  MEMBER1B521B506 BL3
462  MEMBER OFFSETS                                                    3.062
463  MEMBER1B521B532 BL3
464  MEMBER OFFSETS                          3.062            -4.331
465  MEMBER1B523B508 BL3
466  MEMBER OFFSETS                                                    3.062
467  MEMBER1B523B522 BL3
468  MEMBER OFFSETS                  2.166-2.166
469  MEMBER1B524B523 BL3
470  MEMBER OFFSETS                  3.063-3.063      -2.166 2.165
471  MEMBER B525B524 BL3                          6.866.86
472  MEMBER B526B525 BL3                          6.866.86
473  MEMBER B527B526 BL3                          4.804.80
474  MEMBER B528B527 BL3                          4.804.80
475  MEMBER1B528B535 BL3
476  MEMBER OFFSETS                       -2.279 2.046       6.125-5.499
477  MEMBER B529B528 BL3                          6.866.86
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479  MEMBER OFFSETS                  4.331
480  MEMBER1B531B516 BL3
481  MEMBER OFFSETS                                                    3.062
482  MEMBER1B531B530 BL3
483  MEMBER OFFSETS                  2.166 2.166
484  MEMBER1B532B531 BL3
485  MEMBER OFFSETS                                -2.166-2.166
486  MEMBER B533B518 BL3
487  MEMBER1B533B534 BL3
488  MEMBER OFFSETS                 -3.062            6.125
489  MEMBER1B534B526 BL3
490  MEMBER OFFSETS                          6.125-5.499      -2.279 2.046
491  MEMBER1B534B535 BL3
492  MEMBER OFFSETS                 -6.125            6.125
493  MEMBER1B535B536 BL3
494  MEMBER OFFSETS                 -6.125            3.062
495  MEMBER B536B521 BL3
496  MEMBER1B537B533 BL3
497  MEMBER OFFSETS                       -4.331            3.062
498  MEMBER B538B523 BL3
499  MEMBER1B538B537 BL3
500  MEMBER OFFSETS                  2.166-2.166
501  MEMBER1B539B538 BL3
502  MEMBER OFFSETS                  3.063-3.063      -2.166 2.165
503  MEMBER B540B539 BL3                          6.866.86
504  MEMBER1B541B534 BL3
505  MEMBER OFFSETS                       -3.062            6.125
506  MEMBER B541B540 BL3                          6.866.86
507  MEMBER B542B541 BL3                          4.804.80
508  MEMBER1B543B535 BL3
509  MEMBER OFFSETS                       -3.062            6.125
510  MEMBER B543B542 BL3                          4.804.80
511  MEMBER1B543B551 BL3
512  MEMBER OFFSETS                       -2.278 2.046       6.125-5.501
513  MEMBER B544B543 BL3                          6.866.86
514  MEMBER1B545B544 BL3                          6.866.86
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516  MEMBER B546B531 BL3
517  MEMBER1B546B545 BL3
518  MEMBER OFFSETS                  2.166 2.166
519  MEMBER1B547B546 BL3
520  MEMBER OFFSETS                  3.062 3.062      -2.166-2.166
```

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521  MEMBER B547B548 BL3
522  MEMBER1B548B536 BL3
523  MEMBER OFFSETS                                          3.062
524  MEMBER1B549B533 BL3
525  MEMBER OFFSETS                              -3.062
526  MEMBER1B549B550 BL3
527  MEMBER OFFSETS                                    6.125
528  MEMBER1B549B554 BL3
529  MEMBER OFFSETS                        3.063            -4.331
530  MEMBER1B550B541 BL3
531  MEMBER OFFSETS                        6.125-5.501      -2.278 2.046
532  MEMBER1B550B551 BL3
533  MEMBER OFFSETS                  -6.125              6.125
534  MEMBER1B550B558 BL3
535  MEMBER OFFSETS                        6.125            -3.062
536  MEMBER1B551B552 BL3
537  MEMBER OFFSETS                  -6.125
538  MEMBER1B551B560 BL3
539  MEMBER OFFSETS                        6.125            -3.062
540  MEMBER B552B100 BL3
541  MEMBER1B552B553 BL3
542  MEMBER OFFSETS                                    3.062
543  MEMBER1B553B536 BL3
544  MEMBER OFFSETS                              -3.062
545  MEMBER B553B565 BL3
546  MEMBER1B555B538 BL3
547  MEMBER OFFSETS                              -3.062
548  MEMBER B555B554 BL3
549  MEMBER1B556B555 BL3
550  MEMBER OFFSETS                   3.063-3.063
551  MEMBER B557B556 BL3
552  MEMBER B558B557 BL3
553  MEMBER B559B558 BL3
554  MEMBER B560B559 BL3
555  MEMBER B561B560 BL3
556  MEMBER1B562B561 BL3
557  MEMBER OFFSETS                   4.331
558  MEMBER1B563B546 BL3
559  MEMBER OFFSETS                              -3.062
560  MEMBER B563B562 BL3
561  MEMBER1B564B563 BL3
562  MEMBER OFFSETS                   3.062 3.062
563  MEMBER B565B564 BL3
564  MEMBER B567B553 BL3
565  MEMBER B567B571 BL3
566  MEMBER B571B100 BL3
567  MEMBER1B004B008 BL4
568  MEMBER OFFSETS                  -4.650 3.986       2.332-1.999
569  MEMBER1B005B011 BL4
570  MEMBER OFFSETS                  -3.874 4.744       3.125-3.827
571  MEMBER1B005B016 BL4
572  MEMBER OFFSETS                  -4.655-3.981       2.334 1.997
573  MEMBER1B019B003 BL4
574  MEMBER OFFSETS                        6.125-6.417      -2.114 2.215
575  MEMBER1B019B023 BL4
576  MEMBER OFFSETS                  -4.650 3.986       2.325-1.993
577  MEMBER1B019B028 BL4
578  MEMBER OFFSETS                  -3.874-4.744       3.125 3.827
579  MEMBER1B020B006 BL4
580  MEMBER OFFSETS                       -6.125-6.417       2.114 2.215
581  MEMBER1B020B031 BL4
582  MEMBER OFFSETS                  -4.655-3.981       2.334 1.997
583  MEMBER1B034B018 BL4
584  MEMBER OFFSETS                        6.125-6.416      -3.062 3.208
585  MEMBER1B034B038 BL4
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MEMBER OFFSETS                    -4.650 3.986       2.325-1.993
MEMBER1B035B021 BL4
MEMBER OFFSETS                          -6.125-6.416       3.062 3.208
MEMBER1B041B035 BL4
MEMBER OFFSETS                     3.125-3.827      -3.874 4.744
MEMBER1B046B035 BL4
MEMBER OFFSETS                     2.334 1.997      -4.655-3.981
MEMBER B048B080 BL4
MEMBER B048B096 BL4
MEMBER1B050B033 BL4
MEMBER OFFSETS                           6.125-6.417      -3.062 3.209
MEMBER1B050B054 BL4
MEMBER OFFSETS                    -4.650 3.986       2.325-1.993
MEMBER1B051B036 BL4
MEMBER OFFSETS                          -6.125-6.417       3.062 3.209
MEMBER1B051B062 BL4
MEMBER OFFSETS                    -4.655-3.981       2.334 1.997
MEMBER1B059B050 BL4
MEMBER OFFSETS                     3.125 3.827      -3.874-4.744
MEMBER1B066B048 BL4
MEMBER OFFSETS                           6.125-4.375      -3.062 2.187
MEMBER1B067B052 BL4
MEMBER OFFSETS                          -6.125-4.375       3.062 2.187
MEMBER1B067B078 BL4
MEMBER OFFSETS                    -4.655-3.981       2.334 1.997
MEMBER1B070B066 BL4
MEMBER OFFSETS                     2.332-1.999      -4.650 3.986
MEMBER1B504B508 BL4
MEMBER OFFSETS                     3.986 4.650      -1.999-2.332
MEMBER1B504B513 BL4
MEMBER OFFSETS                    -4.744 3.874       3.750-3.062
MEMBER1B505B516 BL4
MEMBER OFFSETS                    -3.986 4.650       1.999-2.332
MEMBER1B519B503 BL4
MEMBER OFFSETS                     6.125      -6.417-2.114       2.215
MEMBER1B519B523 BL4
MEMBER OFFSETS                     3.986 4.650      -1.993-2.325
MEMBER1B520B506 BL4
MEMBER OFFSETS                    -6.125      -6.417 2.114       2.215
MEMBER1B520B526 BL4
MEMBER OFFSETS                     4.744 3.874      -3.750-3.062
MEMBER1B520B531 BL4
MEMBER OFFSETS                    -3.986 4.650       1.993-2.325
MEMBER1B534B518 BL4
MEMBER OFFSETS                     6.125      -6.416-3.062       3.208
MEMBER1B534B538 BL4
MEMBER OFFSETS                     3.986 4.650      -1.993-2.325
MEMBER1B535B521 BL4
MEMBER OFFSETS                    -6.125      -6.416 3.062       3.208
MEMBER1B535B546 BL4
MEMBER OFFSETS                    -3.986 4.650       1.993-2.325
MEMBER B536B571 BL4
MEMBER1B543B534 BL4
MEMBER OFFSETS                     3.750-3.062      -4.744 3.874
MEMBER1B550B533 BL4
MEMBER OFFSETS                     6.125      -6.417-3.062       3.209
MEMBER1B550B555 BL4
MEMBER OFFSETS                     3.986 4.650      -1.999-2.332
MEMBER1B551B536 BL4
MEMBER OFFSETS                    -6.125      -6.417 3.062       3.209
MEMBER1B551B563 BL4
MEMBER OFFSETS                    -3.986 4.650       1.999-2.332
MEMBER1B560B550 BL4
MEMBER OFFSETS                     3.750-3.062      -4.744 3.874
MEMBER1B571B552 BL4
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MEMBER OFFSETS                    3.062 3.224      -2.909-3.062
MEMBER1B084B083 BL5
MEMBER OFFSETS                         -6.125             6.125
MEMBER1B086B085 BL5
MEMBER OFFSETS                         -6.125             6.125
MEMBER1B088B087 BL5
MEMBER OFFSETS                         -6.125             6.125
MEMBER B105B106 BL5
MEMBER B107B108 BL5
MEMBER B109B110 BL5
MEMBER1B025B010 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4-3.312
MEMBER1B026B011 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4-3.312
MEMBER1B027B012 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4-3.312
MEMBER1B028B013 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4-3.312
MEMBER1B029B014 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4-3.312
MEMBER1B040B025 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B041B026 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B042B027 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B043B028 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B044B029 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B056B040 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B057B041 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B058B042 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B059B043 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B060B044 BLX
MEMBER OFFSETS                   -3.312-1.3-4      -3.312-1.3-4
MEMBER1B072B056 BLX
MEMBER OFFSETS                   -3.312-1.3-4 3.312-3.312-1.3-4
MEMBER1B073B057 BLX
MEMBER OFFSETS                   -3.312-1.3-4 3.312-3.312-1.3-4
MEMBER1B074B058 BLX
MEMBER OFFSETS                   -3.312-1.3-4 3.312-3.312-1.3-4
MEMBER1B075B059 BLX
MEMBER OFFSETS                   -3.312-1.3-4 3.312-3.312-1.3-4
MEMBER1B076B060 BLX
MEMBER OFFSETS                   -3.312-1.3-4 3.312-3.312-1.3-4
MEMBER1B525B510 BLX               90.00
MEMBER OFFSETS                   -1.3-4 3.312      -1.3-4 3.312-3.000
MEMBER1B526B511 BLX               90.00
MEMBER OFFSETS                   -1.3-4 3.312      -1.3-4 3.312-3.000
MEMBER1B527B512 BLX               90.00
MEMBER OFFSETS                   -1.3-4 3.312      -1.3-4 3.312-3.000
MEMBER1B528B513 BLX               90.00
MEMBER OFFSETS                   -1.3-4 3.312      -1.3-4 3.312-3.000
MEMBER1B529B514 BLX               90.00
MEMBER OFFSETS                   -1.3-4 3.312      -1.3-4 3.312-3.000
MEMBER1B540B525 BLX               90.00
MEMBER OFFSETS                   -1.3-4 3.312      -1.3-4 3.312
MEMBER1B541B526 BLX               90.00
MEMBER OFFSETS                   -1.3-4 3.312      -1.3-4 3.312
MEMBER1B542B527 BLX               90.00
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716  MEMBER OFFSETS                    -1.3-4 3.312      -1.3-4 3.312
717  MEMBER1B543B528 BLX                90.00
718  MEMBER OFFSETS                    -1.3-4 3.312      -1.3-4 3.312
719  MEMBER1B544B529 BLX                90.00
720  MEMBER OFFSETS                    -1.3-4 3.312      -1.3-4 3.312
721  MEMBER1B557B540 BLX                90.00
722  MEMBER OFFSETS                    -1.3-4 3.312 3.000-1.3-4 3.312
723  MEMBER1B558B541 BLX                90.00
724  MEMBER OFFSETS                    -1.3-4 3.312 3.000-1.3-4 3.312
725  MEMBER1B559B542 BLX                90.00
726  MEMBER OFFSETS                    -1.3-4 3.312 3.000-1.3-4 3.312
727  MEMBER1B560B543 BLX                90.00
728  MEMBER OFFSETS                    -1.3-4 3.312 3.000-1.3-4 3.312
729  MEMBER1B561B544 BLX                90.00
730  MEMBER OFFSETS                    -1.3-4 3.312 3.000-1.3-4 3.312
731  MEMBER B010B009 BLY
732  MEMBER B011B010 BLY
733  MEMBER B012B011 BLY
734  MEMBER B013B012 BLY
735  MEMBER B014B013 BLY
736  MEMBER B015B014 BLY
737  MEMBER B025B024 BLY                                    6.866.86
738  MEMBER B026B025 BLY                                    6.866.86
739  MEMBER B027B026 BLY                                    4.804.80
740  MEMBER B028B027 BLY                                    4.804.80
741  MEMBER B029B028 BLY                                    6.866.86
742  MEMBER B030B029 BLY                                    6.866.86
743  MEMBER B040B039 BLY                                    6.866.86
744  MEMBER B041B040 BLY                                    6.866.86
745  MEMBER B042B041 BLY                                    4.804.80
746  MEMBER B043B042 BLY                                    4.804.80
747  MEMBER B044B043 BLY                                    6.866.86
748  MEMBER B045B044 BLY                                    6.866.86
749  MEMBER B056B055 BLY
750  MEMBER B057B056 BLY
751  MEMBER B058B057 BLY
752  MEMBER B059B058 BLY
753  MEMBER B060B059 BLY
754  MEMBER B061B060 BLY
755  MEMBER B072B071 BLY
756  MEMBER B073B072 BLY
757  MEMBER B074B073 BLY
758  MEMBER B075B074 BLY
759  MEMBER B076B075 BLY
760  MEMBER B077B076 BLY
761  MEMBER130014041 BRC
762  MEMBER OFFSETS                          -15.0017.705
763  MEMBER130014083 BRC
764  MEMBER OFFSETS                    15.000      17.705
765  MEMBER130014113 BRC
766  MEMBER OFFSETS                          15.00017.705
767  MEMBER130024087 BRC
768  MEMBER OFFSETS                    -15.00      17.705
769  MEMBER130024114 BRC
770  MEMBER OFFSETS                          15.00017.705
771  MEMBER130034126 BRC
772  MEMBER OFFSETS                          -15.0017.705
773  MEMBER130034148 BRC
774  MEMBER OFFSETS                    -15.00      17.705
775  MEMBER130034157 BRC
776  MEMBER OFFSETS                    15.000      17.705
777  MEMBER130044127 BRC
778  MEMBER OFFSETS                          -15.0017.705
779  MEMBER130044161 BRC
780  MEMBER OFFSETS                    -15.00      17.705
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781  MEMBER130304356 BRC
782  MEMBER OFFSETS                                    6.375
783  MEMBER120002125 CD1                             L    18.3
784  MEMBER OFFSETS                  19.800-19.80-15.75             -15.75
785  MEMBER120002161 CD1                             L    18.3
786  MEMBER OFFSETS                  19.80019.800-15.75             -15.75
787  MEMBER220012088 CD1                             L    26.0
788  MEMBER OFFSETS                                   -15.75             -15.75
789  MEMBER220012120 CD1                             L    26.0
790  MEMBER OFFSETS                                   -15.75             -15.75
791  MEMBER120022097 CD1                             L    29.5
792  MEMBER OFFSETS                                   -15.75             -15.75
793  MEMBER120022108 CD1                             L    26.0
794  MEMBER OFFSETS                                   -15.75             -15.75
795  MEMBER120032185 CD1                             L    26.0
796  MEMBER OFFSETS                                   -15.75             -15.75
797  MEMBER120032212 CD1                             L    33.5
798  MEMBER OFFSETS                                   -15.75             -15.75
799  MEMBER220042193 CD1                             L    29.5    3.670
800  MEMBER OFFSETS                                   -15.75             -15.75
801  MEMBER120042250 CD1                             L    33.5
802  MEMBER OFFSETS                                   -15.75             -15.75
803  MEMBER120212041 CD1                             L    23.3
804  MEMBER OFFSETS                                   -15.75             -15.75
805  MEMBER120262046 CD1                             L    30.0
806  MEMBER OFFSETS                                   -15.75             -15.75
807  MEMBER120342064 CD1                             L    30.0
808  MEMBER OFFSETS                                   -15.75             -15.75
809  MEMBER120412044 CD1                             L    23.3
810  MEMBER OFFSETS                                   -15.75             -15.75
811  MEMBER120422040 CD1                             L    21.0
812  MEMBER OFFSETS                                   -15.75             -15.75
813  MEMBER120432042 CD1                             L    21.0
814  MEMBER OFFSETS                                   -15.75             -15.75
815  MEMBER120442052 CD1                             L    23.3
816  MEMBER OFFSETS                                   -15.75             -15.75
817  MEMBER120462056 CD1                             L    30.0
818  MEMBER OFFSETS                                   -15.75             -15.75
819  MEMBER120522072 CD1                             L    23.3
820  MEMBER OFFSETS                                   -15.75             -15.75
821  MEMBER120562075 CD1                             L    30.0
822  MEMBER OFFSETS                                   -15.75             -15.75
823  MEMBER120642002 CD1                             L    30.0
824  MEMBER OFFSETS                                   -15.75             -15.75
825  MEMBER120672043 CD1                             L    21.0
826  MEMBER OFFSETS                                   -15.75             -15.75
827  MEMBER120672068 CD1                             L    4.91
828  MEMBER OFFSETS                                   -15.75             -15.75
829  MEMBER120712067 CD1                             L    21.0
830  MEMBER OFFSETS                                   -15.75             -15.75
831  MEMBER120722073 CD1                             L    23.3
832  MEMBER OFFSETS                                   -15.75             -15.75
833  MEMBER120732077 CD1                             L    23.3
834  MEMBER OFFSETS                                   -15.75             -15.75
835  MEMBER120752001 CD1                             L    30.0
836  MEMBER OFFSETS                                   -15.75             -15.75
837  MEMBER120762071 CD1                             L    21.0
838  MEMBER OFFSETS                                   -15.75             -15.75
839  MEMBER120782079 CD1                             L    52.5
840  MEMBER OFFSETS                                   -15.75             -15.75
841  MEMBER120792080 CD1                             L    52.5
842  MEMBER OFFSETS                                   -15.75             -15.75
843  MEMBER120802081 CD1                             L    52.5
844  MEMBER OFFSETS                                   -15.75             -15.75
845  MEMBER120812082 CD1                             L    52.5
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MEMBER OFFSETS                          -15.75            -15.75
MEMBER120822083 CD1                   L    52.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120832084 CD1                   L    52.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER220842085 CD1                   L    52.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER220852086 CD1                   L    52.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER220862001 CD1                   L    52.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER220882089 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER220892090 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120902091 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120912092 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120922093 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120932094 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120942095 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120952002 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120972098 CD1                   L    29.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120982099 CD1                   L    29.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER120992100 CD1                   L    29.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121002101 CD1                   L    29.5
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121022110 CD1                   L    18.3
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121082128 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121092106 CD1                   L    18.3
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121102121 CD1                   L    18.3
MEMBER OFFSETS                          -15.75            -15.75
MEMBER221202138 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121212000 CD1                   L    18.3
MEMBER OFFSETS                          -15.75-19.80-19.80-15.75
MEMBER121212122 CD1                   L    10.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121212129 CD1                   L    10.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121222123 CD1                   L    10.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121232124 CD1                   L    10.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121242125 CD1                   L    10.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121252109 CD1                   L    18.3
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121252144 CD1                   L    10.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121282147 CD1                   L    26.0
MEMBER OFFSETS                          -15.75            -15.75
MEMBER121292141 CD1                   L    10.0
MEMBER OFFSETS                          -15.75            -15.75
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911  MEMBER121382153 CD1                    L    26.0
912  MEMBER OFFSETS                          -15.75            -15.75
913  MEMBER121412157 CD1                    L    10.0
914  MEMBER OFFSETS                          -15.75            -15.75
915  MEMBER121442161 CD1                    L    10.0
916  MEMBER OFFSETS                          -15.75            -15.75
917  MEMBER121472156 CD1                    L    26.0
918  MEMBER OFFSETS                          -15.75            -15.75
919  MEMBER121532175 CD1                    L    26.0
920  MEMBER OFFSETS                          -15.75            -15.75
921  MEMBER121562169 CD1                    L    26.0
922  MEMBER OFFSETS                          -15.75            -15.75
923  MEMBER121572000 CD1                    L    18.3
924  MEMBER OFFSETS                          -15.75-19.8019.800-15.75
925  MEMBER121572158 CD1                    L    10.0
926  MEMBER OFFSETS                          -15.75            -15.75
927  MEMBER121582159 CD1                    L    10.0
928  MEMBER OFFSETS                          -15.75            -15.75
929  MEMBER121592160 CD1                    L    10.0
930  MEMBER OFFSETS                          -15.75            -15.75
931  MEMBER121602161 CD1                    L    10.0
932  MEMBER OFFSETS                          -15.75            -15.75
933  MEMBER121612163 CD1                    L    18.3
934  MEMBER OFFSETS                          -15.75            -15.75
935  MEMBER121622157 CD1                    L    18.3
936  MEMBER OFFSETS                          -15.75            -15.75
937  MEMBER121632167 CD1                    L    18.3
938  MEMBER OFFSETS                          -15.75            -15.75
939  MEMBER121672171 CD1                    L    18.3
940  MEMBER OFFSETS                          -15.75            -15.75
941  MEMBER121692004 CD1                    L    26.0
942  MEMBER OFFSETS                          -15.75            -15.75
943  MEMBER121702162 CD1                    L    18.3
944  MEMBER OFFSETS                          -15.75            -15.75
945  MEMBER121752003 CD1                    L    26.0
946  MEMBER OFFSETS                          -15.75            -15.75
947  MEMBER121772178 CD1                    L    47.5
948  MEMBER OFFSETS                          -15.75            -15.75
949  MEMBER121782179 CD1                    L    47.5
950  MEMBER OFFSETS                          -15.75            -15.75
951  MEMBER121792180 CD1                    L    47.5
952  MEMBER OFFSETS                          -15.75            -15.75
953  MEMBER121802371 CD1                    L    47.5
954  MEMBER OFFSETS                          -15.75            -15.75
955  MEMBER221812182 CD1                    L    47.5
956  MEMBER OFFSETS                          -15.75            -15.75
957  MEMBER221822183 CD1                    L    47.5
958  MEMBER OFFSETS                          -15.75            -15.75
959  MEMBER221832003 CD1                    L    47.5
960  MEMBER OFFSETS                          -15.75            -15.75
961  MEMBER121852186 CD1                    L    26.0
962  MEMBER OFFSETS                          -15.75            -15.75
963  MEMBER121862187 CD1                    L    26.0
964  MEMBER OFFSETS                          -15.75            -15.75
965  MEMBER121872188 CD1                    L    26.0
966  MEMBER OFFSETS                          -15.75            -15.75
967  MEMBER121882189 CD1                    L    26.0    3.250
968  MEMBER OFFSETS                          -15.75            -15.75
969  MEMBER221892190 CD1                    L    26.0    3.250
970  MEMBER OFFSETS                          -15.75            -15.75
971  MEMBER221902191 CD1                    L    26.0    3.250
972  MEMBER OFFSETS                          -15.75            -15.75
973  MEMBER221912004 CD1                    L    26.0    3.250
974  MEMBER OFFSETS                          -15.75            -15.75
975  MEMBER221932194 CD1                    L    29.5    3.670
```

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 976  MEMBER OFFSETS                          -15.75            -15.75
 977  MEMBER221942195 CD1                L    29.5    3.670
 978  MEMBER OFFSETS                          -15.75            -15.75
 979  MEMBER121952196 CD1                L    29.5
 980  MEMBER OFFSETS                          -15.75            -15.75
 981  MEMBER121962197 CD1                L    29.5
 982  MEMBER OFFSETS                          -15.75            -15.75
 983  MEMBER221992201 CD1                L    20.9
 984  MEMBER OFFSETS                          -15.75            -15.75
 985  MEMBER122002198 CD1                L    23.5
 986  MEMBER OFFSETS                          -15.75            -15.75
 987  MEMBER222012203 CD1                L    20.9
 988  MEMBER OFFSETS                          -15.75            -15.75
 989  MEMBER122022369 CD1                L    23.5
 990  MEMBER OFFSETS                          -15.75            -15.75
 991  MEMBER122032224 CD1                L    20.9
 992  MEMBER OFFSETS                          -15.75            -15.75
 993  MEMBER122082202 CD1                L    23.5
 994  MEMBER OFFSETS                          -15.75            -15.75
 995  MEMBER122122236 CD1                L    33.5
 996  MEMBER OFFSETS                          -15.75            -15.75
 997  MEMBER122202360 CD1                L    33.5
 998  MEMBER OFFSETS                          -15.75            -15.75
 999  MEMBER122242226 CD1                L    20.9
1000  MEMBER OFFSETS                          -15.75            -15.75
1001  MEMBER122252208 CD1                L    23.5
1002  MEMBER OFFSETS                          -15.75            -15.75
1003  MEMBER122272225 CD1                L    23.5
1004  MEMBER OFFSETS                          -15.75            -15.75
1005  MEMBER122302227 CD1                L    23.5
1006  MEMBER OFFSETS                          -15.75            -15.75
1007  MEMBER122502220 CD1                L    33.5
      MEMBER OFFSETS                          -15.75            -15.75
```

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1008  MEMBER OFFSETS                          -15.75          -15.75
1009  MEMBER123602244 CD1                  L    33.5
1010  MEMBER OFFSETS                          -15.75          -15.75
1011  MEMBER123692200 CD1                  L    23.5
1012  MEMBER OFFSETS                          -15.75          -15.75
1013  MEMBER123712181 CD1                  L    47.5
1014  MEMBER OFFSETS                          -15.75          -15.75
1015  MEMBER120772001 CD2                  L    23.3
1016  MEMBER OFFSETS                          -15.75          -15.75
1017  MEMBER121982003 CD2                  L    23.5
1018  MEMBER OFFSETS                          -15.75          -15.75
1019  MEMBER120022076 CD3                  L    21.0
1020  MEMBER OFFSETS                          -15.75          -15.75
1021  MEMBER220042199 CD3                  L    20.9
1022  MEMBER OFFSETS                          -15.75          -15.75
1023  MEMBER120012102 CD4                  L    18.3
1024  MEMBER OFFSETS                          -15.75          -15.75
1025  MEMBER120032170 CD4                  L    18.3
1026  MEMBER OFFSETS                          -15.75          -15.75
1027  MEMBER121062002 CD5                  L    18.3
1028  MEMBER OFFSETS                          -15.75          -15.75
1029  MEMBER221712004 CD5                  L    18.3
1030  MEMBER OFFSETS                          -15.75          -15.75
1031  MEMBER220002144 CD6
1032  MEMBER OFFSETS                28.000    -11.81          -11.81
1033  MEMBER220002159 CD6
1034  MEMBER OFFSETS                28.000    -11.81          -11.81
1035  MEMBER120232045 CD6                  L    10.5
1036  MEMBER OFFSETS                          -11.81          -11.81
1037  MEMBER120302060 CD6                  L    6.50
1038  MEMBER OFFSETS                          -11.81          -11.81
1039  MEMBER120452052 CD6                  L    10.5
      MEMBER OFFSETS                          -11.81          -11.81
```

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1040  MEMBER OFFSETS                          -11.81          -11.81
1041  MEMBER120472048 CD6                 L    16.2
1042  MEMBER OFFSETS                          -11.81          -11.81
1043  MEMBER120482049 CD6                 L    16.2
1044  MEMBER OFFSETS                          -11.81          -11.81
1045  MEMBER120492050 CD6                 L    16.2
1046  MEMBER OFFSETS                          -11.81          -11.81
1047  MEMBER120502051 CD6                 L    16.2
1048  MEMBER OFFSETS                          -11.81          -11.81
1049  MEMBER120512052 CD6                 L    16.2
1050  MEMBER OFFSETS                          -11.81          -11.81
1051  MEMBER120522053 CD6                 L    10.0
1052  MEMBER OFFSETS                          -11.81          -11.81
1053  MEMBER120524222 CD6                 L    10.0
1054  MEMBER OFFSETS                          -11.81          -11.81
1055  MEMBER120532054 CD6                 L    10.0
1056  MEMBER OFFSETS                          -11.81          -11.81
1057  MEMBER120542055 CD6                 L    10.0
1058  MEMBER OFFSETS                          -11.81          -11.81
1059  MEMBER120552056 CD6                 L    10.0
1060  MEMBER OFFSETS                          -11.81          -11.81
1061  MEMBER120562057 CD6                 L    26.0
1062  MEMBER OFFSETS                          -11.81          -11.81
1063  MEMBER120572058 CD6                 L    26.0
1064  MEMBER OFFSETS                          -11.81          -11.81
1065  MEMBER120582059 CD6                 L    26.0
1066  MEMBER OFFSETS                          -11.81          -11.81
1067  MEMBER120592060 CD6                 L    26.0
1068  MEMBER OFFSETS                          -11.81          -11.81
1069  MEMBER120602061 CD6                 L    26.0
1070  MEMBER OFFSETS                          -11.81          -11.81
1071  MEMBER120602092 CD6                 L    10.0
      MEMBER OFFSETS                          -11.81          -11.81
```

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1072  MEMBER OFFSETS                          -11.81          -11.81
1073  MEMBER120612062 CD6                 L    26.0
1074  MEMBER OFFSETS                          -11.81          -11.81
1075  MEMBER120622063 CD6                 L    26.0
1076  MEMBER OFFSETS                          -11.81          -11.81
1077  MEMBER120632064 CD6                 L    26.0
1078  MEMBER OFFSETS                          -11.81          -11.81
1079  MEMBER120832116 CD6                 L    26.0
1080  MEMBER OFFSETS                          -11.81          -11.81
1081  MEMBER120922103 CD6                 L    8.00
1082  MEMBER OFFSETS                          -11.81          -11.81
1083  MEMBER120992150 CD6                 L    26.0
1084  MEMBER OFFSETS                          -11.81          -11.81
1085  MEMBER121032123 CD6                 L    8.00
1086  MEMBER OFFSETS                          -11.81          -11.81
1087  MEMBER121162135 CD6                 L    26.0
1088  MEMBER OFFSETS                          -11.81          -11.81
1089  MEMBER221232000 CD6
1090  MEMBER OFFSETS                          -11.81-28.00    -11.81
1091  MEMBER121302131 CD6
1092  MEMBER OFFSETS                          -11.81          -11.81
1093  MEMBER121312132 CD6
1094  MEMBER OFFSETS                          -11.81          -11.81
1095  MEMBER121322133 CD6
1096  MEMBER OFFSETS                          -11.81          -11.81
1097  MEMBER121332134 CD6                 L    6.50
1098  MEMBER OFFSETS                          -11.81          -11.81
1099  MEMBER121342135 CD6                 L    6.50
1100  MEMBER OFFSETS                          -11.81          -11.81
1101  MEMBER121352136 CD6                 L    10.0
1102  MEMBER OFFSETS                          -11.81          -11.81
1103  MEMBER121352367 CD6                 L    26.0
      MEMBER OFFSETS                          -11.81          -11.81
```

```
1104  MEMBER OFFSETS                          -11.81            -11.81
1105  MEMBER121362137 CD6                  L    10.0
1106  MEMBER OFFSETS                          -11.81            -11.81
1107  MEMBER121372138 CD6                  L    10.0
1108  MEMBER OFFSETS                          -11.81            -11.81
1109  MEMBER121382139 CD6                  L    8.00
1110  MEMBER OFFSETS                          -11.81            -11.81
1111  MEMBER121392140 CD6                  L    8.00
1112  MEMBER OFFSETS                          -11.81            -11.81
1113  MEMBER121402141 CD6                  L    8.00
1114  MEMBER OFFSETS                          -11.81            -11.81
1115  MEMBER121412142 CD6                       9.50
1116  MEMBER OFFSETS                          -11.81            -11.81
1117  MEMBER221422000 CD6
1118  MEMBER OFFSETS                          -11.81-28.00      -11.81
1119  MEMBER121442145 CD6                  L    8.00
1120  MEMBER OFFSETS                          -11.81            -11.81
1121  MEMBER121452146 CD6                  L    8.00
1122  MEMBER OFFSETS                          -11.81            -11.81
1123  MEMBER121462147 CD6                  L    8.00
1124  MEMBER OFFSETS                          -11.81            -11.81
1125  MEMBER121472148 CD6                  L    11.0    3.670
1126  MEMBER OFFSETS                          -11.81            -11.81
1127  MEMBER121482149 CD6                  L    11.0    3.670
1128  MEMBER OFFSETS                          -11.81            -11.81
1129  MEMBER121492150 CD6                  L    11.0    3.670
1130  MEMBER OFFSETS                          -11.81            -11.81
1131  MEMBER121502151 CD6                  L    3.75
1132  MEMBER OFFSETS                          -11.81            -11.81
1133  MEMBER121502195 CD6                  L    26.0
1134  MEMBER OFFSETS                          -11.81            -11.81
1135  MEMBER121512152 CD6                  L    3.75
      MEMBER OFFSETS                          -11.81            -11.81
```

```
LDOPT SF      +Z   64.20  490.00   -190.  193.60GLOBEN    HYDFLDCMB   NPNP    K
      ON-BOTTOM STABILITY ANALYSIS OPERATING MAXIMUM WD
LCSEL           2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
FILE B
LOAD
LOADCN 361
LOADLB361 OPERATING WIND 0 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  0.0000 193.60021APAXVX
LOADCN 362
LOADLB362 OPERATING WIND 30 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666   30.00 193.60021APAXVXBY
LOADCN 363
LOADLB363 OPERATING WIND 60 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666   60.00 193.60021APAXVXBY
LOADCN 364
LOADLB364 OPERATING WIND 90 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666   90.00 193.60021APBY
LOADCN 365
LOADLB365 OPERATING WIND 120 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  120.00 193.60021APBYCXVX
LOADCN 366
LOADLB366 OPERATING WIND 150 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  150.00 193.60021APBYCXVX
LOADCN 367
LOADLB367 OPERATING WIND 180 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  180.00 193.60021APCXVX
LOADCN 368
LOADLB368 OPERATING WIND 210 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  210.00 193.60021APCXVXDY
LOADCN 369
LOADLB369 OPERATING WIND 240 DEGREE MAX WD
WIND
WIND DIM   29.00 0.01666  240.00 193.60021APCXVXDY
LOADCN 370
LOADLB370 OPERATING WIND 270 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  270.00 193.60021APDY
LOADCN 371
LOADLB371 OPERATING WIND 300 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  300.00 193.60021APDYAXVX
LOADCN 372
LOADLB372 OPERATING WIND 330 DEGREE MAX WD
WIND
WIND DIM   29.08 0.01666  330.00 193.60021APDYAXVX
LOADCN 421
LOADLB 421WAVE&CURR 1-YR 0 DEG MAX WD
WAVE
WAVE0.95STOK  3.00193.60  3.03          0.00      D          5.0  72MM10 1 1 5
CURR
CURR         0.00   1.313  0.                 1.0        US CN FPS WDP
CURR        10.00   1.502  0
CURR        20.00   1.658  0
CURR        30.00   1.757  0
CURR        40.00   1.831  0
CURR        50.00   1.890  0
CURR        60.00   1.940  0
CURR        70.00   1.983  0
CURR        80.00   2.021  0
```

```
 68  CURR        90.00   2.056  0
 69  CURR       100.00   2.087  0
 70  LOADCN 422
 71  LOADLB 422WAVE&CURR 1-YR 30 DEG MAX WD
 72  WAVE
 73  WAVE0.95STOK   3.00193.60  3.03         30.00      D          5.0  72MM10 1 1 5
 74  CURR
 75  CURR         0.00   1.313    30.0             1.0        US CN FPS WDP
 76  CURR        10.00   1.502    30.0
 77  CURR        20.00   1.658    30.0
 78  CURR        30.00   1.757    30.0
 79  CURR        40.00   1.831    30.0
 80  CURR        50.00   1.890    30.0
 81  CURR        60.00   1.940    30.0
 82  CURR        70.00   1.983    30.0
 83  CURR        80.00   2.021    30.0
 84  CURR        90.00   2.056    30.0
 85  CURR       100.00   2.087    30.0
 86  LOADCN 423
 87  LOADLB 423WAVE&CURR 1-YR 60 DEG MAX WD
 88  WAVE
 89  WAVE0.95STOK   3.00193.60  3.03         60.00      D          5.0  72MM10 1 1 5
 90  CURR
 91  CURR         0.00   1.313    60.0             1.0        US CN FPS WDP
 92  CURR        10.00   1.502    60.0
 93  CURR        20.00   1.658    60.0
 94  CURR        30.00   1.757    60.0
 95  CURR        40.00   1.831    60.0
 96  CURR        50.00   1.890    60.0
 97  CURR        60.00   1.940    60.0
 98  CURR        70.00   1.983    60.0
 99  CURR        80.00   2.021    60.0
100  CURR        90.00   2.056    60.0
101  CURR       100.00   2.087    60.0
102  LOADCN 424
103  LOADLB 424WAVE&CURR 1-YR 90 DEG MAX WD
104  WAVE
105  WAVE0.95STOK   3.00193.60  3.03         90.00      D          5.0  72MM10 1 1 5
106  CURR
107  CURR         0.00   1.313    90.0             1.0        US CN FPS WDP
108  CURR        10.00   1.502    90.0
109  CURR        20.00   1.658    90.0
110  CURR        30.00   1.757    90.0
111  CURR        40.00   1.831    90.0
112  CURR        50.00   1.890    90.0
113  CURR        60.00   1.940    90.0
114  CURR        70.00   1.983    90.0
115  CURR        80.00   2.021    90.0
116  CURR        90.00   2.056    90.0
117  CURR       100.00   2.087    90.0
118  LOADCN 425
119  LOADLB 425WAVE&CURR 1-YR 120 DEG MAX WD
120  WAVE
121  WAVE0.95STOK   3.00193.60  3.03        120.00      D          5.0  72MM10 1 1 5
122  CURR
123  CURR         0.00   1.313   120.0             1.0        US CN FPS WDP
124  CURR        10.00   1.502   120.0
125  CURR        20.00   1.658   120.0
126  CURR        30.00   1.757   120.0
127  CURR        40.00   1.831   120.0
128  CURR        50.00   1.890   120.0
129  CURR        60.00   1.940   120.0
130  CURR        70.00   1.983   120.0
131  CURR        80.00   2.021   120.0
132  CURR        90.00   2.056   120.0
133  CURR       100.00   2.087   120.0
134  LOADCN 426
```

```
LOADLB 426WAVE&CURR 1-YR 150 DEG MAX WD
WAVE
WAVE0.95STOK   3.00193.60  3.03        150.00      D          5.0  72MM10 1 1 5
CURR
CURR         0.00   1.313   150.0             1.0        US CN FPS WDP
CURR        10.00   1.502   150.0
CURR        20.00   1.658   150.0
CURR        30.00   1.757   150.0
CURR        40.00   1.831   150.0
CURR        50.00   1.890   150.0
CURR        60.00   1.940   150.0
CURR        70.00   1.983   150.0
CURR        80.00   2.021   150.0
CURR        90.00   2.056   150.0
CURR       100.00   2.087   150.0
LOADCN 427
LOADLB 427WAVE&CURR 1-YR 180 DEG MAX WD
WAVE
WAVE0.95STOK   3.00193.60  3.03        180.00      D          5.0  72MM10 1 1 5
CURR
CURR         0.00   1.313   180.0             1.0        US CN FPS WDP
CURR        10.00   1.502   180.0
CURR        20.00   1.658   180.0
CURR        30.00   1.757   180.0
CURR        40.00   1.831   180.0
CURR        50.00   1.890   180.0
CURR        60.00   1.940   180.0
CURR        70.00   1.983   180.0
CURR        80.00   2.021   180.0
CURR        90.00   2.056   180.0
CURR       100.00   2.087   180.0
LOADCN 428
LOADLB 428WAVE&CURR 1-YR 210 DEG MAX WD
WAVE
WAVE0.95STOK   3.00193.60  3.03        210.00      D          5.0  72MM10 1 1 5
CURR
CURR         0.00   1.313   210.0             1.0        US CN FPS WDP
CURR        10.00   1.502   210.0
CURR        20.00   1.658   210.0
CURR        30.00   1.757   210.0
CURR        40.00   1.831   210.0
CURR        50.00   1.890   210.0
CURR        60.00   1.940   210.0
CURR        70.00   1.983   210.0
CURR        80.00   2.021   210.0
CURR        90.00   2.056   210.0
CURR       100.00   2.087   210.0
LOADCN 429
LOADLB 429WAVE&CURR 1-YR 240 DEG MAX WD
WAVE
WAVE0.95STOK   3.00193.60  3.03        240.00      D          5.0  72MM10 1 1 5
CURR
CURR         0.00   1.313   240.0             1.0        US CN FPS WDP
CURR        10.00   1.502   240.0
CURR        20.00   1.658   240.0
CURR        30.00   1.757   240.0
CURR        40.00   1.831   240.0
CURR        50.00   1.890   240.0
CURR        60.00   1.940   240.0
CURR        70.00   1.983   240.0
CURR        80.00   2.021   240.0
CURR        90.00   2.056   240.0
CURR       100.00   2.087   240.0
LOADCN 430
LOADLB 430WAVE&CURR 1-YR 270 DEG MAX WD
WAVE
WAVE0.95STOK   3.00193.60  3.03        270.00      D          5.0  72MM10 1 1 5
```

```
CURR
CURR         0.00   1.313   270.0             1.0        US CN FPS WDP
CURR        10.00   1.502   270.0
CURR        20.00   1.658   270.0
CURR        30.00   1.757   270.0
CURR        40.00   1.831   270.0
CURR        50.00   1.890   270.0
CURR        60.00   1.940   270.0
CURR        70.00   1.983   270.0
CURR        80.00   2.021   270.0
CURR        90.00   2.056   270.0
CURR       100.00   2.087   270.0
LOADCN 431
LOADLB 431WAVE&CURR 1-YR 300 DEG MAX WD
WAVE
WAVE0.95STOK   3.00193.60  3.03        300.00      D          5.0  72MM10 1 1 5
CURR
CURR         0.00   1.313   300.0             1.0        US CN FPS WDP
CURR        10.00   1.502   300.0
CURR        20.00   1.658   300.0
CURR        30.00   1.757   300.0
CURR        40.00   1.831   300.0
CURR        50.00   1.890   300.0
CURR        60.00   1.940   300.0
CURR        70.00   1.983   300.0
CURR        80.00   2.021   300.0
CURR        90.00   2.056   300.0
CURR       100.00   2.087   300.0
LOADCN 432
LOADLB 432WAVE&CURR 1-YR 330 DEG MAX WD
WAVE
WAVE0.95STOK   3.00193.60  3.03        330.00      D          5.0  72MM10 1 1 5
CURR
CURR         0.00   1.313   330.0             1.0        US CN FPS WDP
CURR        10.00   1.502   330.0
CURR        20.00   1.658   330.0
CURR        30.00   1.757   330.0
CURR        40.00   1.831   330.0
CURR        50.00   1.890   330.0
CURR        60.00   1.940   330.0
CURR        70.00   1.983   330.0
CURR        80.00   2.021   330.0
CURR        90.00   2.056   330.0
CURR       100.00   2.087   330.0
LCOMB
LCOMB LIV   260    1. 261    1. 262    1. 265    1. 266    1.
LCOMB LIV   270    1. 271    1. 272    1. 275    1. 276    1. 277    1.
LCOMB GRVT    21.1000 1051.1000 1101.1000 1151.1000 1201.1000 1251.1000
LCOMB GRVT  1301.1000 2801.1000 2851.1000 2901.1000
LCOMB 1100 GRVT1.0000LIV 1.0000305 2.0000
LCOMB 2001 11001.0000315 2.0000          361 1.0000421 1.0000
LCOMB 2002 11001.0000315 1.7320310 -1.000362 1.0000422 1.0000
LCOMB 2003 11001.0000315 1.0000310 -1.732363 1.0000423 1.0000
LCOMB 2004 11001.0000310 -2.000          364 1.0000424 1.0000
LCOMB 2005 11001.0000315 -1.000310 -1.732365 1.0000425 1.0000
LCOMB 2006 11001.0000315 -1.732310 -1.000366 1.0000426 1.0000
LCOMB 2007 11001.0000315 -2.000          367 1.0000427 1.0000
LCOMB 2008 11001.0000315 -1.732310  1.000368 1.0000428 1.0000
LCOMB 2009 11001.0000315 -1.000310  1.732369 1.0000429 1.0000
LCOMB 2010 11001.0000310 2.0000          370 1.0000430 1.0000
LCOMB 2011 11001.0000315 1.0000310  1.732371 1.0000431 1.0000
LCOMB 2012 11001.0000315 1.7320310  1.000372 1.0000432 1.0000
END
```

```
PSIOPT +ZENG          SM    0.01   0.001999                  100     1.0   490.
PILSUP AVG          2001200420072004200720102001 2010
PLTRQ SD                            DAE  ALE  ASE  UCE       LG   XH
PLGRUP
PLGRUP CAS          56.00  2.00  29.0  11.6   50.    96.0
PLGRUP CAS          56.00  1.50  29.0  11.6   50.   109.0
PLGRUP CAS          56.00  1.25  29.0  11.6   50.   140.0
PLGRUP CAS        U 56.00  1.50  29.0  11.6   50.      5.
*
PLGRUP PL1          36.00  1.50  29.0  11.6   50.    54.2
PLGRUP PL1          36.00  1.25  29.0  11.6   50.   216.0
PLGRUP PL1        U 36.00  1.50  29.0  11.6   50.     5.0
*
PLGRUP PL2          36.00  1.50  29.0  11.6   50.    54.2
PLGRUP PL2          36.00  1.25  29.0  11.6   50.   216.0
PLGRUP PL2        U 36.00  1.50  29.0  11.6   50.     5.0
*
PLGRUP CND          30.00   1.0  29.0  11.6   50.   158.0                 0.784
PILE
PILE   101 291 CAS                                                  SOL2
PILE   102 292 PL1                                                  SOL1
PILE   103 293 PL2                                                  SOL1
PILE  C201C202 CND                                                  SOL1
PILE  C301C302 CND                                                  SOL1
PILE  C401C402 CND                                                  SOL1
SCOUR      7.
SOIL
SOIL TZAXIAL HEAD 18  8           .03937SOL1
SOIL T-Z     SLOCSM   8   0.00        5.E-05
SOIL         T-Z                    1.46        2.83        5.21        7.31
SOIL         T-Z         9.14       18.28       45.70
SOIL T-Z     SLOCSM   8   9.84        5.E-05
SOIL         T-Z               3.02  1.46  5.04  2.83  7.55  5.21  9.06  7.31
SOIL         T-Z  10.07  9.14  9.06 18.28  9.06 45.70
SOIL T-Z     SLOCSM   8   9.87        5.E-05
SOIL         T-Z              16.29  1.46 27.15  2.83 40.73  5.21 48.87  7.31
SOIL         T-Z  54.30  9.14 48.87 18.28 48.87 45.70
SOIL T-Z     SLOCSM   8  26.25        5.E-05
SOIL         T-Z              25.65  1.46 42.75  2.83 64.13  5.21 76.95  7.31
SOIL         T-Z  85.50  9.14 76.95 18.28 76.95 45.70
SOIL T-Z     SLOCSM   8  26.28        5.E-05
SOIL         T-Z              18.55  2.54 18.55  5.08 18.55 12.70 18.55 25.40
SOIL         T-Z  18.55 50.80 18.55127.00 18.55254.00
SOIL T-Z     SLOCSM   8  52.49        5.E-05
SOIL         T-Z              45.45  2.54 45.45  5.08 45.45 12.70 45.45 25.40
SOIL         T-Z  45.45 50.80 45.45127.00 45.45254.00
SOIL T-Z     SLOCSM   8  52.52        5.E-05
SOIL         T-Z              39.51  1.46 65.85  2.83 98.78  5.21118.53  7.31
SOIL         T-Z 131.70  9.14118.53 18.28118.53 45.70
SOIL T-Z     SLOCSM   8 157.48        5.E-05
SOIL         T-Z              78.18  1.46130.30  2.83195.46  5.21234.55  7.31
SOIL         T-Z 260.61  9.14234.55 18.28234.55 45.70
SOIL T-Z     SLOCSM   8 157.51        5.E-05
SOIL         T-Z              86.99  1.46144.99  2.83217.48  5.21260.98  7.31
SOIL         T-Z 289.98  9.14260.98 18.28260.98 45.70
SOIL T-Z     SLOCSM   8 232.94        5.E-05
SOIL         T-Z             119.09  1.46198.48  2.83297.71  5.21357.26  7.31
SOIL         T-Z 396.95  9.14357.26 18.28357.26 45.70
SOIL T-Z     SLOCSM   8 232.95        5.E-05
SOIL         T-Z             142.12  1.46236.87  2.83355.30  5.21426.36  7.31
SOIL         T-Z 473.73  9.14426.36 18.28426.36 45.70
SOIL T-Z     SLOCSM   8 282.15        5.E-05
SOIL         T-Z             156.78  1.46261.30  2.83391.94  5.21470.33  7.31
SOIL         T-Z 522.59  9.14470.33 18.28470.33 45.70
SOIL T-Z     SLOCSM   8 282.18        5.E-05
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 66  SOIL          T-Z             192.38  2.54192.38  5.08192.38 12.70192.38 25.40
 67  SOIL          T-Z 192.38 50.80192.38127.00192.38254.00
 68  SOIL T-Z      SLOCSM   8 291.99         5.E-05
 69  SOIL          T-Z             192.38  2.54192.38  5.08192.38 12.70192.38 25.40
 70  SOIL          T-Z 192.38 50.80192.38127.00192.38254.00
 71  SOIL T-Z      SLOCSM   8 292.02         5.E-05
 72  SOIL          T-Z             145.78  1.46242.97  2.83364.46  5.21437.35  7.31
 73  SOIL          T-Z 485.95  9.14437.35 18.28437.35 45.70
 74  SOIL T-Z      SLOCSM   8 390.42         5.E-05
 75  SOIL          T-Z             187.14  1.46311.89  2.83467.84  5.21561.41  7.31
 76  SOIL          T-Z 623.79  9.14561.41 18.28561.41 45.70
 77  SOIL T-Z      SLOCSM   8 390.45         5.E-05
 78  SOIL          T-Z             187.14  1.46311.89  2.83467.84  5.21561.41  7.31
 79  SOIL          T-Z 623.79  9.14561.41 18.28561.41 45.70
 80  SOIL T-Z      SLOCSM   8 459.32         5.E-05
 81  SOIL          T-Z             209.52  1.46349.20  2.83523.81  5.21628.57  7.31
 82  SOIL          T-Z 698.41  9.14628.57 18.28628.57 45.70
 83  SOIL BEARING HEAD 18  8          0.03937SOL1
 84  SOIL BEAR     SLOC     8   0.00         1.4E-3
 85  SOIL          T-Z   0.00  0.00  0.47  1.83  0.94 11.89  1.26 22.86  1.42 38.40
 86  SOIL          T-Z   1.70 66.75  1.89 91.44  1.89457.20
 87  SOIL BEAR     SLOC     8   9.84         1.4E-3
 88  SOIL          T-Z   0.00  0.00  0.94  1.83  1.89 11.89  2.53 22.86  2.83 38.40
 89  SOIL          T-Z   3.40 66.75  3.78 91.44  3.78457.20
 90  SOIL BEAR     SLOC     8   9.87         1.4E-3
 91  SOIL          T-Z   0.00  0.00 12.98  1.83 25.96 11.89 34.79 22.86 38.94 38.40
 92  SOIL          T-Z  46.73 66.75 51.92 91.44 51.92457.20
 93  SOIL BEAR     SLOC     8  26.25         1.4E-3
 94  SOIL          T-Z   0.00  0.00 15.34  1.83 30.68 11.89 41.11 22.86 46.02 38.40
 95  SOIL          T-Z  55.22 66.75 61.36 91.44 61.36457.20
 96  SOIL BEAR     SLOC     8  26.28         1.4E-3
 97  SOIL          T-Z   0.00  0.00 60.15  1.83120.31 11.89161.21 22.86180.46 38.40
 98  SOIL          T-Z 216.55 66.75240.61 91.44240.61457.20
 99  SOIL BEAR     SLOC     8  52.49         1.4E-3
100  SOIL          T-Z   0.00  0.00147.36  1.83294.72 11.89394.93 22.86442.09 38.40
101  SOIL          T-Z 530.50 66.75589.45 91.44589.45457.20
102  SOIL BEAR     SLOC     8  52.52         1.4E-3
103  SOIL          T-Z   0.00  0.00110.82  1.83221.63 11.89296.99 22.86332.45 38.40
104  SOIL          T-Z 398.94 66.75443.27 91.44443.27457.20
105  SOIL BEAR     SLOC     8 157.48         1.4E-3
106  SOIL          T-Z   0.00  0.00155.14  1.83310.29 11.89415.79 22.86465.43 38.40
107  SOIL          T-Z 558.52 66.75620.57 91.44620.57457.20
108  SOIL BEAR     SLOC     8 157.51         1.4E-3
109  SOIL          T-Z   0.00  0.00192.08  1.83384.17 11.89514.78 22.86576.25 38.40
110  SOIL          T-Z 691.50 66.75768.33 91.44768.33457.20
111  SOIL BEAR     SLOC     8 232.94         1.4E-3
112  SOIL          T-Z   0.00  0.00243.80  1.83487.59 11.89653.38 22.86731.39 38.40
113  SOIL          T-Z 877.67 66.75975.19 91.44975.19457.20
114  SOIL BEAR     SLOC     8 232.97         1.4E-3
115  SOIL          T-Z   0.00  0.00225.43  1.83450.86 11.89604.15 22.86676.29 38.40
116  SOIL          T-Z 811.55 66.75901.72 91.44901.72457.20
117  SOIL BEAR     SLOC     8 282.15         1.4E-3
118  SOIL          T-Z   0.00  0.00260.54  1.83521.07 11.89698.24 22.86781.61 38.40
119  SOIL          T-Z 937.93 66.751042.2 91.441042.2457.20
120  SOIL BEAR     SLOC     8 282.18         1.4E-3
121  SOIL          T-Z   0.00  0.00476.10  1.83952.20 11.891276.0 22.861428.3 38.40
122  SOIL          T-Z 1714.0 66.751904.4 91.441904.4457.20
123  SOIL BEAR     SLOC     8 291.99         1.4E-3
124  SOIL          T-Z   0.00  0.00476.10  1.83952.20 11.891276.0 22.861428.3 38.40
125  SOIL          T-Z 1714.0 66.751904.4 91.441904.4457.20
126  SOIL BEAR     SLOC     8 292.02         1.4E-3
127  SOIL          T-Z   0.00  0.00288.12  1.83576.25 11.89772.17 22.86864.37 38.40
128  SOIL          T-Z 1037.3 66.751152.5 91.441152.5457.20
129  SOIL BEAR     SLOC     8 390.42         1.4E-3
130  SOIL          T-Z   0.00  0.00362.00  1.83724.00 11.89970.17 22.861086.0 38.40
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SOIL          T-Z 1303.2 66.751448.0 91.441448.0457.20
SOIL BEAR     SLOC     8 390.45        1.4E-3
SOIL          T-Z   0.00  0.00362.00  1.83724.00 11.89970.17 22.861086.0 38.40
SOIL          T-Z 1303.2 66.751448.0 91.441448.0457.20
SOIL BEAR     SLOC     8 459.32        1.4E-3
SOIL          T-Z   0.00  0.00376.78  1.83753.56 11.891009.8 22.861130.3 38.40
SOIL          T-Z 1356.4 66.751507.1 91.441507.1457.20
SOIL TORSION HEAD                  1000.SOL1ASSUMED
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SOIL LATERAL HEAD 82          36.00.03937SOL1
SOIL P-Y      SLOCSM   7   0.00       .006
SOIL          P-Y   0.00  0.00  1.26  4.57  1.81 13.71  2.74 45.70  3.95137.10
SOIL          P-Y   0.00685.50  0.001371.0
SOIL P-Y      SLOCSM   7   1.64       .006
SOIL          P-Y   0.00  0.00  2.04  4.57  2.92 13.71  4.43 45.70  6.38137.10
SOIL          P-Y   0.20685.50  0.201371.0
SOIL P-Y      SLOCSM   7   3.28       .006
SOIL          P-Y   0.00  0.00  2.85  4.57  4.09 13.71  6.20 45.70  8.92137.10
SOIL          P-Y   0.56685.50  0.561371.0
SOIL P-Y      SLOCSM   7   4.92       .006
SOIL          P-Y   0.00  0.00  3.70  4.57  5.31 13.71  8.05 45.70 11.59137.10
SOIL          P-Y   1.09685.50  1.091371.0
SOIL P-Y      SLOCSM   7   6.56       .006
SOIL          P-Y   0.00  0.00  4.59  4.57  6.59 13.71  9.98 45.70 14.38137.10
SOIL          P-Y   1.80685.50  1.801371.0
SOIL P-Y      SLOCSM   7   8.20       .006
SOIL          P-Y   0.00  0.00  5.52  4.57  7.92 13.71 12.00 45.70 17.28137.10
SOIL          P-Y   2.70685.50  2.701371.0
SOIL P-Y      SLOCSM   7   9.84       .006
SOIL          P-Y   0.00  0.00  6.49  4.57  9.31 13.71 14.11 45.70 20.31137.10
SOIL          P-Y   3.81685.50  3.811371.0
SOIL P-Y      SLOCSM   7   9.87       .006
SOIL          P-Y   0.00  0.00 56.25  2.29 80.70  6.86122.28 22.85176.08 68.55
SOIL          P-Y  33.01342.75 33.01685.50
SOIL P-Y      SLOCSM   7  11.48       .006
SOIL          P-Y   0.00  0.00 61.15  2.29 87.73  6.86132.93 22.85191.42 68.55
SOIL          P-Y  41.87342.75 41.87685.50
SOIL P-Y      SLOCSM   7  13.12       .006
SOIL          P-Y   0.00  0.00 66.16  2.29 94.93  6.86143.83 22.85207.12 68.55
SOIL          P-Y  51.78342.75 51.78685.50
SOIL P-Y      SLOCSM   7  14.76       .006
SOIL          P-Y   0.00  0.00 71.29  2.29102.29  6.86154.98 22.85223.17 68.55
SOIL          P-Y  62.77342.75 62.77685.50
SOIL P-Y      SLOCSM   7  16.40       .006
SOIL          P-Y   0.00  0.00 76.54  2.29109.81  6.86166.38 22.85239.59 68.55
SOIL          P-Y  74.87342.75 74.87685.50
SOIL P-Y      SLOCSM   7  18.04       .006
SOIL          P-Y   0.00  0.00 81.90  2.29117.50  6.86178.04 22.85256.37 68.55
SOIL          P-Y  88.13342.75 88.13685.50
SOIL P-Y      SLOCSM   7  19.69       .006
SOIL          P-Y   0.00  0.00 87.37  2.29125.36  6.86189.94 22.85273.51 68.55
SOIL          P-Y 102.57342.75102.57685.50
SOIL P-Y      SLOCSM   7  21.33       .006
SOIL          P-Y   0.00  0.00 92.96  2.29133.38  6.86202.09 22.85291.01 68.55
SOIL          P-Y 118.22342.75118.22685.50
SOIL P-Y      SLOCSM   7  22.97       .006
SOIL          P-Y   0.00  0.00 98.67  2.29141.56  6.86214.49 22.85308.87 68.55
SOIL          P-Y 135.13342.75135.13685.50
SOIL P-Y      SLOCSM   7  24.61       .006
SOIL          P-Y   0.00  0.00104.49  2.29149.91  6.86227.14 22.85327.09 68.55
SOIL          P-Y 153.32342.75153.32685.50
SOIL P-Y      SLOCSM   7  26.25       .006
SOIL          P-Y   0.00  0.00110.42  2.29158.43  6.86240.05 22.85345.67 68.55
SOIL          P-Y 172.83342.75172.83685.50
SOIL P-Y      SLOCSM   7  26.28       .006
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196  SOIL          P-Y   0.00  0.00 30.16  1.90 58.56  3.81105.21  7.62154.10 15.23
197  SOIL          P-Y 172.76 30.47173.40 34.28
198  SOIL P-Y      SLOCSM   7  27.89       .006
199  SOIL          P-Y   0.00  0.00 32.06  1.90 62.34  3.81112.54  7.62166.54 15.23
200  SOIL          P-Y 188.20 30.47188.99 34.28
201  SOIL P-Y      SLOCSM   7  29.53       .006
202  SOIL          P-Y   0.00  0.00 33.96  1.90 66.12  3.81119.84  7.62178.89 15.23
203  SOIL          P-Y 203.61 30.47204.57 34.28
204  SOIL P-Y      SLOCSM   7  31.17       .006
205  SOIL          P-Y   0.00  0.00 35.86  1.90 69.89  3.81127.10  7.62191.17 15.23
206  SOIL          P-Y 218.99 30.47220.12 34.28
207  SOIL P-Y      SLOCSM   7  32.81       .006
208  SOIL          P-Y   0.00  0.00 37.76  1.90 73.65  3.81134.34  7.62203.40 15.23
209  SOIL          P-Y 234.36 30.47235.66 34.28
210  SOIL P-Y      SLOCSM   7  34.45       .006
211  SOIL          P-Y   0.00  0.00 39.66  1.90 77.41  3.81141.56  7.62215.57 15.23
212  SOIL          P-Y 249.70 30.47251.19 34.28
213  SOIL P-Y      SLOCSM   7  36.09       .006
214  SOIL          P-Y   0.00  0.00 41.56  1.90 81.17  3.81148.76  7.62227.71 15.23
215  SOIL          P-Y 265.03 30.47266.71 34.28
216  SOIL P-Y      SLOCSM   7  37.73       .006
217  SOIL          P-Y   0.00  0.00 43.45  1.90 84.92  3.81155.95  7.62239.80 15.23
218  SOIL          P-Y 280.34 30.47282.21 34.28
219  SOIL P-Y      SLOCSM   7  39.37       .006
220  SOIL          P-Y   0.00  0.00 45.35  1.90 88.68  3.81163.12  7.62251.87 15.23
221  SOIL          P-Y 295.63 30.47297.71 34.28
222  SOIL P-Y      SLOCSM   7  41.01       .006
223  SOIL          P-Y   0.00  0.00 47.25  1.90 92.43  3.81170.28  7.62263.92 15.23
224  SOIL          P-Y 310.92 30.47313.20 34.28
225  SOIL P-Y      SLOCSM   7  42.65       .006
226  SOIL          P-Y   0.00  0.00 49.14  1.90 96.18  3.81177.44  7.62275.94 15.23
227  SOIL          P-Y 326.19 30.47328.67 34.28
228  SOIL P-Y      SLOCSM   7  44.29       .006
229  SOIL          P-Y   0.00  0.00 51.04  1.90 99.93  3.81184.59  7.62287.94 15.23
230  SOIL          P-Y 341.45 30.47344.15 34.28
231  SOIL P-Y      SLOCSM   7  45.93       .006
232  SOIL          P-Y   0.00  0.00 53.06  1.90104.61  3.81198.10  7.62329.81 15.23
233  SOIL          P-Y 423.41 30.47430.27 34.28
234  SOIL P-Y      SLOCSM   7  47.57       .006
235  SOIL          P-Y   0.00  0.00 54.95  1.90108.34  3.81205.17  7.62341.59 15.23
236  SOIL          P-Y 438.53 30.47445.64 34.28
237  SOIL P-Y      SLOCSM   7  49.21       .006
238  SOIL          P-Y   0.00  0.00 56.85  1.90112.08  3.81212.25  7.62353.37 15.23
239  SOIL          P-Y 453.65 30.47461.01 34.28
240  SOIL P-Y      SLOCSM   7  50.85       .006
241  SOIL          P-Y   0.00  0.00 58.74  1.90115.82  3.81219.32  7.62365.15 15.23
242  SOIL          P-Y 468.77 30.47476.37 34.28
243  SOIL P-Y      SLOCSM   7  52.49       .006
244  SOIL          P-Y   0.00  0.00 60.64  1.90119.55  3.81226.40  7.62376.93 15.23
245  SOIL          P-Y 483.89 30.47491.74 34.28
246  SOIL P-Y      SLOCSM   7  52.52       .006
247  SOIL          P-Y   0.00  0.00141.90  2.29203.59  6.86308.48 22.85444.20 68.55
248  SOIL          P-Y 444.20342.75444.20685.50
249  SOIL P-Y      SLOCSM   7  54.13       .006
250  SOIL          P-Y   0.00  0.00142.79  2.29204.87  6.86310.40 22.85446.98 68.55
251  SOIL          P-Y 446.98342.75446.98685.50
252  SOIL P-Y      SLOCSM   7  55.77       .006
253  SOIL          P-Y   0.00  0.00143.67  2.29206.14  6.86312.33 22.85449.76 68.55
254  SOIL          P-Y 449.76342.75449.76685.50
255  SOIL P-Y      SLOCSM   7  57.41       .006
256  SOIL          P-Y   0.00  0.00144.56  2.29207.41  6.86314.26 22.85452.53 68.55
257  SOIL          P-Y 452.53342.75452.53685.50
258  SOIL P-Y      SLOCSM   7  59.06       .006
259  SOIL          P-Y   0.00  0.00145.45  2.29208.68  6.86316.19 22.85455.31 68.55
260  SOIL          P-Y 455.31342.75455.31685.50
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261  SOIL P-Y     SLOCSM    7  60.70       .006
262  SOIL          P-Y   0.00  0.00146.33  2.29209.96  6.86318.11 22.85458.09 68.55
263  SOIL          P-Y 458.09342.75458.09685.50
264  SOIL P-Y     SLOCSM    7  60.73       .006
265  SOIL          P-Y   0.00  0.00146.33  2.29209.96  6.86318.11 22.85458.09 68.55
266  SOIL          P-Y 458.09342.75458.09685.50
267  SOIL P-Y     SLOCSM    7  62.34       .006
268  SOIL          P-Y   0.00  0.00147.22  2.29211.23  6.86320.04 22.85460.86 68.55
269  SOIL          P-Y 460.86342.75460.86685.50
270  SOIL P-Y     SLOCSM    7  65.62       .006
271  SOIL          P-Y   0.00  0.00148.99  2.29213.77  6.86323.90 22.85466.41 68.55
272  SOIL          P-Y 466.41342.75466.41685.50
273  SOIL P-Y     SLOCSM    7  68.90       .006
274  SOIL          P-Y   0.00  0.00150.77  2.29216.32  6.86327.75 22.85471.97 68.55
275  SOIL          P-Y 471.97342.75471.97685.50
276  SOIL P-Y     SLOCSM    7  72.18       .006
277  SOIL          P-Y   0.00  0.00152.54  2.29218.86  6.86331.61 22.85477.52 68.55
278  SOIL          P-Y 477.52342.75477.52685.50
279  SOIL P-Y     SLOCSM    7  75.46       .006
280  SOIL          P-Y   0.00  0.00154.31  2.29221.41  6.86335.47 22.85483.07 68.55
281  SOIL          P-Y 483.07342.75483.07685.50
282  SOIL P-Y     SLOCSM    7  78.74       .006
283  SOIL          P-Y   0.00  0.00156.09  2.29223.95  6.86339.32 22.85488.62 68.55
284  SOIL          P-Y 488.62342.75488.62685.50
285  SOIL P-Y     SLOCSM    7  82.02       .006
286  SOIL          P-Y   0.00  0.00157.86  2.29226.50  6.86343.18 22.85494.18 68.55
287  SOIL          P-Y 494.18342.75494.18685.50
288  SOIL P-Y     SLOCSM    7  85.30       .006
289  SOIL          P-Y   0.00  0.00159.64  2.29229.04  6.86347.03 22.85499.73 68.55
290  SOIL          P-Y 499.73342.75499.73685.50
291  SOIL P-Y     SLOCSM    7  88.58       .006
292  SOIL          P-Y   0.00  0.00161.41  2.29231.59  6.86350.89 22.85505.28 68.55
293  SOIL          P-Y 505.28342.75505.28685.50
294  SOIL P-Y     SLOCSM    7  91.86       .006
295  SOIL          P-Y   0.00  0.00163.18  2.29234.13  6.86354.75 22.85510.83 68.55
296  SOIL          P-Y 510.83342.75510.83685.50
297  SOIL P-Y     SLOCSM    7  95.14       .006
298  SOIL          P-Y   0.00  0.00164.96  2.29236.68  6.86358.60 22.85516.39 68.55
299  SOIL          P-Y 516.39342.75516.39685.50
300  SOIL P-Y     SLOCSM    7  98.43       .006
301  SOIL          P-Y   0.00  0.00166.73  2.29239.22  6.86362.46 22.85521.94 68.55
302  SOIL          P-Y 521.94342.75521.94685.50
303  SOIL P-Y     SLOCSM    7 101.71       .006
304  SOIL          P-Y   0.00  0.00168.50  2.29241.77  6.86366.31 22.85527.49 68.55
305  SOIL          P-Y 527.49342.75527.49685.50
306  SOIL P-Y     SLOCSM    7 104.99       .006
307  SOIL          P-Y   0.00  0.00170.28  2.29244.31  6.86370.17 22.85533.04 68.55
308  SOIL          P-Y 533.04342.75533.04685.50
309  SOIL P-Y     SLOCSM    7 108.27       .006
310  SOIL          P-Y   0.00  0.00172.05  2.29246.86  6.86374.03 22.85538.60 68.55
311  SOIL          P-Y 538.60342.75538.60685.50
312  SOIL P-Y     SLOCSM    7 111.55       .006
313  SOIL          P-Y   0.00  0.00173.83  2.29249.40  6.86377.88 22.85544.15 68.55
314  SOIL          P-Y 544.15342.75544.15685.50
315  SOIL P-Y     SLOCSM    7 114.83       .006
316  SOIL          P-Y   0.00  0.00175.60  2.29251.95  6.86381.74 22.85549.70 68.55
317  SOIL          P-Y 549.70342.75549.70685.50
318  SOIL P-Y     SLOCSM    7 118.11       .006
319  SOIL          P-Y   0.00  0.00177.37  2.29254.49  6.86385.59 22.85555.26 68.55
320  SOIL          P-Y 555.26342.75555.26685.50
321  SOIL P-Y     SLOCSM    7 121.39       .006
322  SOIL          P-Y   0.00  0.00179.15  2.29257.04  6.86389.45 22.85560.81 68.55
323  SOIL          P-Y 560.81342.75560.81685.50
324  SOIL P-Y     SLOCSM    7 124.67       .006
325  SOIL          P-Y   0.00  0.00180.92  2.29259.58  6.86393.31 22.85566.36 68.55
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SOIL          P-Y 566.36342.75566.36685.50
SOIL P-Y      SLOCSM   7 127.95       .006
SOIL          P-Y   0.00  0.00182.69  2.29262.13  6.86397.16 22.85397.16 68.55
SOIL          P-Y 397.16342.75397.16685.50
SOIL P-Y      SLOCSM   7 131.23       .006
SOIL          P-Y   0.00  0.00184.47  2.29264.67  6.86401.02 22.85401.02 68.55
SOIL          P-Y 401.02342.75401.02685.50
SOIL P-Y      SLOCSM   7 134.51       .006
SOIL          P-Y   0.00  0.00186.24  2.29267.22  6.86404.87 22.85404.87 68.55
SOIL          P-Y 404.87342.75404.87685.50
SOIL P-Y      SLOCSM   7 137.80       .006
SOIL          P-Y   0.00  0.00188.02  2.29269.76  6.86408.73 22.85408.73 68.55
SOIL          P-Y 408.73342.75408.73685.50
SOIL P-Y      SLOCSM   7 141.08       .006
SOIL          P-Y   0.00  0.00189.79  2.29272.31  6.86412.59 22.85412.59 68.55
SOIL          P-Y 412.59342.75412.59685.50
SOIL P-Y      SLOCSM   7 144.36       .006
SOIL          P-Y   0.00  0.00191.56  2.29274.85  6.86416.44 22.85416.44 68.55
SOIL          P-Y 416.44342.75416.44685.50
SOIL P-Y      SLOCSM   7 147.64       .006
SOIL          P-Y   0.00  0.00193.34  2.29277.40  6.86420.30 22.85420.30 68.55
SOIL          P-Y 420.30342.75420.30685.50
SOIL P-Y      SLOCSM   7 150.92       .006
SOIL          P-Y   0.00  0.00195.11  2.29279.94  6.86424.15 22.85424.15 68.55
SOIL          P-Y 424.15342.75424.15685.50
SOIL P-Y      SLOCSM   7 154.20       .006
SOIL          P-Y   0.00  0.00196.88  2.29282.49  6.86428.01 22.85428.01 68.55
SOIL          P-Y 428.01342.75428.01685.50
SOIL P-Y      SLOCSM   7 157.48       .006
SOIL          P-Y   0.00  0.00198.66  2.29285.03  6.86431.87 22.85431.87 68.55
SOIL          P-Y 431.87342.75431.87685.50
SOIL P-Y      SLOCSM   7 157.51       .006
SOIL          P-Y   0.00  0.00245.96  1.14352.90  3.43534.69 11.43534.69 34.28
SOIL          P-Y 534.69171.38534.69342.75
SOIL P-Y      SLOCSM   7 232.94       .006
SOIL          P-Y   0.00  0.00312.18  1.14447.91  3.43678.65 11.43678.65 34.28
SOIL          P-Y 678.65171.38678.65342.75
SOIL P-Y      SLOCSM   7 232.97       .006
SOIL          P-Y   0.00  0.00444.62  1.14637.93  3.43966.56 11.43966.56 34.28
SOIL          P-Y 966.56171.38966.56342.75
SOIL P-Y      SLOCSM   7 282.15       .006
SOIL          P-Y   0.00  0.00444.62  1.14637.93  3.43966.56 11.43966.56 34.28
SOIL          P-Y 966.56171.38966.56342.75
SOIL P-Y      SLOCSM   7 282.18       .006
SOIL          P-Y   0.00  0.00669.64  1.901328.8  3.812577.6  7.624615.7 15.23
SOIL          P-Y 6715.0 30.476952.6 34.28
SOIL P-Y      SLOCSM   7 291.99       .006
SOIL          P-Y   0.00  0.00693.02  1.901375.3  3.812668.6  7.624783.8 15.23
SOIL          P-Y 6974.7 30.477224.2 34.28
SOIL P-Y      SLOCSM   7 292.02       .006
SOIL          P-Y   0.00  0.00368.94  1.14529.34  3.43802.04 11.43802.04 34.28
SOIL          P-Y 802.04171.38802.04342.75
SOIL P-Y      SLOCSM   7 390.42       .006
SOIL          P-Y   0.00  0.00463.54  1.14665.07  3.431007.7 11.431007.7 34.28
SOIL          P-Y 1007.7171.381007.7342.75
SOIL P-Y      SLOCSM   7 390.45       .006
SOIL          P-Y   0.00  0.00463.54  1.14665.07  3.431007.7 11.431007.7 34.28
SOIL          P-Y 1007.7171.381007.7342.75
SOIL P-Y      SLOCSM   7 459.32       .006
SOIL          P-Y   0.00  0.00482.45  1.14692.22  3.431048.8 11.431048.8 34.28
SOIL          P-Y 1048.8171.381048.8342.75
SOIL TZAXIAL HEAD 18  8           .03937SOL2
SOIL T-Z      SLOCSM   8   0.00        3.2e-5
SOIL          T-Z   0.00  0.00  0.00  2.28  0.00  4.41  0.00  8.11  0.00 11.38
SOIL          T-Z   0.00 14.22  0.00 28.44  0.00 71.10
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391  SOIL T-Z     SLOCSM   8   9.84        3.2e-5
392  SOIL         T-Z   0.00  0.00  4.70  2.28  7.83  4.41 11.75  8.11 14.10 11.38
393  SOIL         T-Z  15.67 14.22 14.10 28.44 14.10 71.10
394  SOIL T-Z     SLOCSM   8   9.87        3.2e-5
395  SOIL         T-Z   0.00  0.00 25.34  2.28 42.24  4.41 63.36  8.11 76.03 11.38
396  SOIL         T-Z  84.48 14.22 76.03 28.44 76.03 71.10
397  SOIL T-Z     SLOCSM   8  26.25        3.2e-5
398  SOIL         T-Z   0.00  0.00 39.91  2.28 66.51  4.41 99.77  8.11119.72 11.38
399  SOIL         T-Z 133.02 14.22119.72 28.44119.72 71.10
400  SOIL T-Z     SLOCSM   8  26.28        3.2e-5
401  SOIL         T-Z   0.00  0.00 28.86  2.54 28.86  5.08 28.86 12.70 28.86 25.40
402  SOIL         T-Z  28.86 50.80 28.86127.00 28.86254.00
403  SOIL T-Z     SLOCSM   8  52.49        3.2e-5
404  SOIL         T-Z   0.00  0.00 70.71  2.54 70.71  5.08 70.71 12.70 70.71 25.40
405  SOIL         T-Z  70.71 50.80 70.71127.00 70.71254.00
406  SOIL T-Z     SLOCSM   8  52.52        3.2e-5
407  SOIL         T-Z   0.00  0.00 61.47  2.28102.45  4.41153.68  8.11184.41 11.38
408  SOIL         T-Z 204.90 14.22184.41 28.44184.41 71.10
409  SOIL T-Z     SLOCSM   8 157.48        3.2e-5
410  SOIL         T-Z   0.00  0.00121.64  2.28202.73  4.41304.09  8.11364.91 11.38
411  SOIL         T-Z 405.45 14.22364.91 28.44364.91 71.10
412  SOIL T-Z     SLOCSM   8 157.51        3.2e-5
413  SOIL         T-Z   0.00  0.00135.34  2.28225.57  4.41338.36  8.11406.03 11.38
414  SOIL         T-Z 451.15 14.22406.03 28.44406.03 71.10
415  SOIL T-Z     SLOCSM   8 232.94        3.2e-5
416  SOIL         T-Z   0.00  0.00185.27  2.28308.79  4.41463.18  8.11555.82 11.38
417  SOIL         T-Z 617.58 14.22555.82 28.44555.82 71.10
418  SOIL T-Z     SLOCSM   8 232.97        3.2e-5
419  SOIL         T-Z   0.00  0.00221.11  2.28368.51  4.41552.77  8.11663.33 11.38
420  SOIL         T-Z 737.03 14.22663.33 28.44663.33 71.10
421  SOIL T-Z     SLOCSM   8 282.15        3.2e-5
422  SOIL         T-Z   0.00  0.00243.91  2.28406.52  4.41609.79  8.11731.74 11.38
423  SOIL         T-Z 813.05 14.22731.74 28.44731.74 71.10
424  SOIL T-Z     SLOCSM   8 282.18        3.2e-5
425  SOIL         T-Z   0.00  0.00299.31  2.54299.31  5.08299.31 12.70299.31 25.40
426  SOIL         T-Z 299.31 50.80299.31127.00299.31254.00
427  SOIL T-Z     SLOCSM   8 291.99        3.2e-5
428  SOIL         T-Z   0.00  0.00299.31  2.54299.31  5.08299.31 12.70299.31 25.40
429  SOIL         T-Z 299.31 50.80299.31127.00299.31254.00
430  SOIL T-Z     SLOCSM   8 292.02        3.2e-5
431  SOIL         T-Z   0.00  0.00226.81  2.28378.02  4.41567.02  8.11680.43 11.38
432  SOIL         T-Z 756.03 14.22680.43 28.44680.43 71.10
433  SOIL T-Z     SLOCSM   8 390.42        3.2e-5
434  SOIL         T-Z   0.00  0.00291.15  2.28485.24  4.41727.86  8.11873.44 11.38
435  SOIL         T-Z 970.49 14.22873.44 28.44873.44 71.10
436  SOIL T-Z     SLOCSM   8 390.45        3.2e-5
437  SOIL         T-Z   0.00  0.00291.15  2.28485.24  4.41727.86  8.11873.44 11.38
438  SOIL         T-Z 970.49 14.22873.44 28.44873.44 71.10
439  SOIL T-Z     SLOCSM   8 459.32        3.2e-5
440  SOIL         T-Z   0.00  0.00325.98  2.28543.29  4.41814.94  8.11977.93 11.38
441  SOIL         T-Z 1086.6 14.22977.93 28.44977.93 71.10
442  SOIL BEARING HEAD 19  8          0.03937SOL2
443  SOIL BEAR    SLOC     8   0.00        8.8E-4
444  SOIL         T-Z   0.00  0.00  0.75  2.84  1.49 18.49  2.00 35.56  2.24 59.74
445  SOIL         T-Z   2.68103.84  2.98142.24  2.98711.20
446  SOIL BEAR    SLOC     8   9.84        8.8E-4
447  SOIL         T-Z   0.00  0.00  1.49  2.84  2.98 18.49  4.00 35.56  4.47 59.74
448  SOIL         T-Z   5.37103.84  5.96142.24  5.96711.20
449  SOIL BEAR    SLOC     8   9.87        8.8E-4
450  SOIL         T-Z   0.00  0.00 20.50  2.84 41.01 18.49 54.95 35.56 61.51 59.74
451  SOIL         T-Z  73.82103.84 82.02142.24 82.02711.20
452  SOIL BEAR    SLOC     8  26.25        8.8E-4
453  SOIL         T-Z   0.00  0.00 24.23  2.84 48.47 18.49 64.94 35.56 72.70 59.74
454  SOIL         T-Z  87.24103.84 96.93142.24 96.93711.20
455  SOIL BEAR    SLOC     8  26.28        8.8E-4
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456  SOIL          T-Z   0.00  0.00 15.18  2.84 30.36 18.49 40.68 35.56 45.53 59.74
457  SOIL          T-Z  54.64103.84 60.71142.24 60.71711.20
458  SOIL BEAR     SLOC     8  52.49        8.8E-4
459  SOIL          T-Z   0.00  0.00 37.18  2.84 74.36 18.49 99.65 35.56111.54 59.74
460  SOIL          T-Z 133.85103.84148.73142.24148.73711.20
461  SOIL BEAR     SLOC     8  52.52        8.8E-4
462  SOIL          T-Z   0.00  0.00 27.96  2.84 55.92 18.49 74.93 35.56 83.88 59.74
463  SOIL          T-Z 100.66103.84111.84142.24111.84711.20
464  SOIL BEAR     SLOC     8  55.77        8.8E-4
465  SOIL          T-Z   0.00  0.00271.50  2.84543.00 18.49727.62 35.56814.50 59.74
466  SOIL          T-Z 977.41103.841086.0142.241086.0711.20
467  SOIL BEAR     SLOC     8 157.48        8.8E-4
468  SOIL          T-Z   0.00  0.00375.41  2.84750.82 18.491006.1 35.561126.2 59.74
469  SOIL          T-Z 1351.5103.841501.6142.241501.6711.20
470  SOIL BEAR     SLOC     8 157.51        8.8E-4
471  SOIL          T-Z   0.00  0.00464.79  2.84929.59 18.491245.6 35.561394.4 59.74
472  SOIL          T-Z 1673.3103.841859.2142.241859.2711.20
473  SOIL BEAR     SLOC     8 232.94        8.8E-4
474  SOIL          T-Z   0.00  0.00589.93  2.841179.9 18.491581.0 35.561769.8 59.74
475  SOIL          T-Z 2123.7103.842359.7142.242359.7711.20
476  SOIL BEAR     SLOC     8 232.97        8.8E-4
477  SOIL          T-Z   0.00  0.00545.48  2.841091.0 18.491461.9 35.561636.5 59.74
478  SOIL          T-Z 1963.7103.842181.9142.242181.9711.20
479  SOIL BEAR     SLOC     8 282.15        8.8E-4
480  SOIL          T-Z   0.00  0.00630.43  2.841260.9 18.491689.6 35.561891.3 59.74
481  SOIL          T-Z 2269.6103.842521.7142.242521.7711.20
482  SOIL BEAR     SLOC     8 282.18        8.8E-4
483  SOIL          T-Z   0.00  0.001152.1  2.842304.1 18.493087.5 35.563456.2 59.74
484  SOIL          T-Z 4147.4103.844608.2142.244608.2711.20
485  SOIL BEAR     SLOC     8 291.99        8.8E-4
486  SOIL          T-Z   0.00  0.001152.1  2.842304.1 18.493087.5 35.563456.2 59.74
487  SOIL          T-Z 4147.4103.844608.2142.244608.2711.20
488  SOIL BEAR     SLOC     8 292.02        8.8E-4
489  SOIL          T-Z   0.00  0.00697.19  2.841394.4 18.491868.5 35.562091.6 59.74
490  SOIL          T-Z 2509.9103.842788.8142.242788.8711.20
491  SOIL BEAR     SLOC     8 390.42        8.8E-4
492  SOIL          T-Z   0.00  0.00875.96  2.841751.9 18.492347.6 35.562627.9 59.74
493  SOIL          T-Z 3153.4103.843503.8142.243503.8711.20
494  SOIL BEAR     SLOC     8 390.45        8.8E-4
495  SOIL          T-Z   0.00  0.00875.96  2.841751.9 18.492347.6 35.562627.9 59.74
496  SOIL          T-Z 3153.4103.843503.8142.243503.8711.20
497  SOIL BEAR     SLOC     8 459.32        8.8E-4
498  SOIL          T-Z   0.00  0.00911.71  2.841823.4 18.492443.4 35.562735.1 59.74
499  SOIL          T-Z 3282.2103.843646.8142.243646.8711.20
500  SOIL TORSION HEAD                  1000.SOL2ASSUMED
501  SOIL LATERAL HEAD 82          56.00.03937SOL2
502  SOIL P-Y      SLOCSM   7   0.00       .006
503  SOIL          P-Y   0.00  0.00  1.96  7.11  2.82 21.33  4.27 71.10  6.14213.30
504  SOIL          P-Y   0.001066.5  0.002133.0
505  SOIL P-Y      SLOCSM   7   1.64       .006
506  SOIL          P-Y   0.00  0.00  3.09  7.11  4.44 21.33  6.73 71.10  9.69213.30
507  SOIL          P-Y   0.301066.5  0.302133.0
508  SOIL P-Y      SLOCSM   7   3.28       .006
509  SOIL          P-Y   0.00  0.00  4.26  7.11  6.12 21.33  9.27 71.10 13.35213.30
510  SOIL          P-Y   0.831066.5  0.832133.0
511  SOIL P-Y      SLOCSM   7   4.92       .006
512  SOIL          P-Y   0.00  0.00  5.47  7.11  7.85 21.33 11.90 71.10 17.13213.30
513  SOIL          P-Y   1.611066.5  1.612133.0
514  SOIL P-Y      SLOCSM   7   6.56       .006
515  SOIL          P-Y   0.00  0.00  6.72  7.11  9.64 21.33 14.61 71.10 21.03213.30
516  SOIL          P-Y   2.631066.5  2.632133.0
517  SOIL P-Y      SLOCSM   7   8.20       .006
518  SOIL          P-Y   0.00  0.00  8.00  7.11 11.48 21.33 17.40 71.10 25.06213.30
519  SOIL          P-Y   3.921066.5  3.922133.0
520  SOIL P-Y      SLOCSM   7   9.84       .006
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SOIL         P-Y   0.00  0.00  9.33  7.11 13.38 21.33 20.28 71.10 29.20213.30
SOIL         P-Y   5.471066.5  5.472133.0
SOIL P-Y     SLOCSM   7   9.87       .006
SOIL         P-Y   0.00  0.00 76.96  3.56110.42 10.67167.31 35.55240.93106.65
SOIL         P-Y  45.17533.25 45.171066.5
SOIL P-Y     SLOCSM   7  11.48       .006
SOIL         P-Y   0.00  0.00 82.60  3.56118.52 10.67179.58 35.55258.59106.65
SOIL         P-Y  56.57533.25 56.571066.5
SOIL P-Y     SLOCSM   7  13.12       .006
SOIL         P-Y   0.00  0.00 88.36  3.56126.78 10.67192.09 35.55276.61106.65
SOIL         P-Y  69.15533.25 69.151066.5
SOIL P-Y     SLOCSM   7  14.76       .006
SOIL         P-Y   0.00  0.00 94.23  3.56135.20 10.67204.85 35.55294.99106.65
SOIL         P-Y  82.97533.25 82.971066.5
SOIL P-Y     SLOCSM   7  16.40       .006
SOIL         P-Y   0.00  0.00100.22  3.56143.79 10.67217.87 35.55313.73106.65
SOIL         P-Y  98.04533.25 98.041066.5
SOIL P-Y     SLOCSM   7  18.04       .006
SOIL         P-Y   0.00  0.00106.32  3.56152.55 10.67231.13 35.55332.83106.65
SOIL         P-Y 114.41533.25114.411066.5
SOIL P-Y     SLOCSM   7  19.69       .006
SOIL         P-Y   0.00  0.00112.54  3.56161.47 10.67244.65 35.55352.30106.65
SOIL         P-Y 132.11533.25132.111066.5
SOIL P-Y     SLOCSM   7  21.33       .006
SOIL         P-Y   0.00  0.00118.87  3.56170.55 10.67258.41 35.55372.12106.65
SOIL         P-Y 151.17533.25151.171066.5
SOIL P-Y     SLOCSM   7  22.97       .006
SOIL         P-Y   0.00  0.00125.32  3.56179.80 10.67272.43 35.55392.30106.65
SOIL         P-Y 171.63533.25171.631066.5
SOIL P-Y     SLOCSM   7  24.61       .006
SOIL         P-Y   0.00  0.00131.88  3.56189.22 10.67286.69 35.55412.84106.65
SOIL         P-Y 193.52533.25193.521066.5
SOIL P-Y     SLOCSM   7  26.25       .006
SOIL         P-Y   0.00  0.00138.56  3.56198.80 10.67301.21 35.55433.74106.65
SOIL         P-Y 216.87533.25216.871066.5
SOIL P-Y     SLOCSM   7  26.28       .006
SOIL         P-Y   0.00  0.00 46.63  2.96 88.94  5.93151.24 11.85200.41 23.70
SOIL         P-Y 211.58 47.40211.78 53.33
SOIL P-Y     SLOCSM   7  27.89       .006
SOIL         P-Y   0.00  0.00 49.64  2.96 95.25  5.93164.78 11.85224.65 23.70
SOIL         P-Y 240.52 47.40240.87 53.33
SOIL P-Y     SLOCSM   7  29.53       .006
SOIL         P-Y   0.00  0.00 52.65  2.96101.50  5.93178.19 11.85249.36 23.70
SOIL         P-Y 270.98 47.40271.54 53.33
SOIL P-Y     SLOCSM   7  31.17       .006
SOIL         P-Y   0.00  0.00 55.66  2.96107.71  5.93191.47 11.85274.46 23.70
SOIL         P-Y 302.90 47.40303.76 53.33
SOIL P-Y     SLOCSM   7  32.81       .006
SOIL         P-Y   0.00  0.00 58.65  2.96113.89  5.93204.65 11.85299.86 23.70
SOIL         P-Y 336.25 47.40337.50 53.33
SOIL P-Y     SLOCSM   7  34.45       .006
SOIL         P-Y   0.00  0.00 61.65  2.96120.04  5.93217.73 11.85325.50 23.70
SOIL         P-Y 370.95 47.40372.72 53.33
SOIL P-Y     SLOCSM   7  36.09       .006
SOIL         P-Y   0.00  0.00 64.64  2.96126.17  5.93230.72 11.85351.34 23.70
SOIL         P-Y 406.95 47.40409.38 53.33
SOIL P-Y     SLOCSM   7  37.73       .006
SOIL         P-Y   0.00  0.00 67.60  2.96132.12  5.93242.62 11.85373.09 23.70
SOIL         P-Y 436.15 47.40439.07 53.33
SOIL P-Y     SLOCSM   7  39.37       .006
SOIL         P-Y   0.00  0.00 70.56  2.96137.96  5.93253.78 11.85391.87 23.70
SOIL         P-Y 459.95 47.40463.17 53.33
SOIL P-Y     SLOCSM   7  41.01       .006
SOIL         P-Y   0.00  0.00 73.51  2.96143.80  5.93264.93 11.85410.60 23.70
SOIL         P-Y 483.73 47.40487.27 53.33
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 586  SOIL P-Y     SLOCSM   7  42.65       .006
 587  SOIL         P-Y   0.00  0.00 76.46  2.96149.63  5.93276.06 11.85429.30 23.70
 588  SOIL         P-Y 507.49 47.40511.35 53.33
 589  SOIL P-Y     SLOCSM   7  44.29       .006
 590  SOIL         P-Y   0.00  0.00 79.41  2.96155.46  5.93287.18 11.85447.97 23.70
 591  SOIL         P-Y 531.23 47.40535.42 53.33
 592  SOIL P-Y     SLOCSM   7  45.93       .006
 593  SOIL         P-Y   0.00  0.00 82.55  2.96162.75  5.93308.20 11.85513.12 23.70
 594  SOIL         P-Y 658.74 47.40669.42 53.33
 595  SOIL P-Y     SLOCSM   7  47.57       .006
 596  SOIL         P-Y   0.00  0.00 85.50  2.96168.56  5.93319.21 11.85531.45 23.70
 597  SOIL         P-Y 682.26 47.40693.32 53.33
 598  SOIL P-Y     SLOCSM   7  49.21       .006
 599  SOIL         P-Y   0.00  0.00 88.45  2.96174.37  5.93330.21 11.85549.77 23.70
 600  SOIL         P-Y 705.79 47.40717.23 53.33
 601  SOIL P-Y     SLOCSM   7  50.85       .006
 602  SOIL         P-Y   0.00  0.00 91.39  2.96180.19  5.93341.22 11.85568.10 23.70
 603  SOIL         P-Y 729.32 47.40741.14 53.33
 604  SOIL P-Y     SLOCSM   7  52.49       .006
 605  SOIL         P-Y   0.00  0.00 94.34  2.96186.00  5.93352.23 11.85586.43 23.70
 606  SOIL         P-Y 752.84 47.40765.05 53.33
 607  SOIL P-Y     SLOCSM   7  52.52       .006
 608  SOIL         P-Y   0.00  0.00220.77  3.56316.75 10.67479.93 35.55691.09106.65
 609  SOIL         P-Y 691.09533.25691.091066.5
 610  SOIL P-Y     SLOCSM   7  54.13       .006
 611  SOIL         P-Y   0.00  0.00222.15  3.56318.73 10.67482.92 35.55695.41106.65
 612  SOIL         P-Y 695.41533.25695.411066.5
 613  SOIL P-Y     SLOCSM   7  55.77       .006
 614  SOIL         P-Y   0.00  0.00223.53  3.56320.71 10.67485.92 35.55699.73106.65
 615  SOIL         P-Y 699.73533.25699.731066.5
 616  SOIL P-Y     SLOCSM   7  57.41       .006
 617  SOIL         P-Y   0.00  0.00224.90  3.56322.69 10.67488.92 35.55704.05106.65
 618  SOIL         P-Y 704.05533.25704.051066.5
 619  SOIL P-Y     SLOCSM   7  59.06       .006
 620  SOIL         P-Y   0.00  0.00226.28  3.56324.67 10.67491.92 35.55708.37106.65
 621  SOIL         P-Y 708.37533.25708.371066.5
 622  SOIL P-Y     SLOCSM   7  60.70       .006
 623  SOIL         P-Y   0.00  0.00227.66  3.56326.65 10.67494.92 35.55712.69106.65
 624  SOIL         P-Y 712.69533.25712.691066.5
 625  SOIL P-Y     SLOCSM   7  60.73       .006
 626  SOIL         P-Y   0.00  0.00227.66  3.56326.65 10.67494.92 35.55712.69106.65
 627  SOIL         P-Y 712.69533.25712.691066.5
 628  SOIL P-Y     SLOCSM   7  62.34       .006
 629  SOIL         P-Y   0.00  0.00229.04  3.56328.63 10.67497.92 35.55717.01106.65
 630  SOIL         P-Y 717.01533.25717.011066.5
 631  SOIL P-Y     SLOCSM   7  65.62       .006
 632  SOIL         P-Y   0.00  0.00231.80  3.56332.59 10.67503.92 35.55725.65106.65
 633  SOIL         P-Y 725.65533.25725.651066.5
 634  SOIL P-Y     SLOCSM   7  68.90       .006
 635  SOIL         P-Y   0.00  0.00234.56  3.56336.55 10.67509.92 35.55734.29106.65
 636  SOIL         P-Y 734.29533.25734.291066.5
 637  SOIL P-Y     SLOCSM   7  72.18       .006
 638  SOIL         P-Y   0.00  0.00237.32  3.56340.51 10.67515.92 35.55742.92106.65
 639  SOIL         P-Y 742.92533.25742.921066.5
 640  SOIL P-Y     SLOCSM   7  75.46       .006
 641  SOIL         P-Y   0.00  0.00240.08  3.56344.47 10.67521.92 35.55751.56106.65
 642  SOIL         P-Y 751.56533.25751.561066.5
 643  SOIL P-Y     SLOCSM   7  78.74       .006
 644  SOIL         P-Y   0.00  0.00242.84  3.56348.43 10.67527.92 35.55760.20106.65
 645  SOIL         P-Y 760.20533.25760.201066.5
 646  SOIL P-Y     SLOCSM   7  82.02       .006
 647  SOIL         P-Y   0.00  0.00245.60  3.56352.38 10.67533.92 35.55768.84106.65
 648  SOIL         P-Y 768.84533.25768.841066.5
 649  SOIL P-Y     SLOCSM   7  85.30       .006
 650  SOIL         P-Y   0.00  0.00248.36  3.56356.34 10.67539.92 35.55777.48106.65
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SOIL          P-Y 777.48533.25777.481066.5
SOIL P-Y      SLOCSM    7  88.58       .006
SOIL          P-Y   0.00  0.00251.12  3.56360.30 10.67545.91 35.55786.12106.65
SOIL          P-Y 786.12533.25786.121066.5
SOIL P-Y      SLOCSM    7  91.86       .006
SOIL          P-Y   0.00  0.00253.88  3.56364.26 10.67551.91 35.55794.76106.65
SOIL          P-Y 794.76533.25794.761066.5
SOIL P-Y      SLOCSM    7  95.14       .006
SOIL          P-Y   0.00  0.00256.64  3.56368.22 10.67557.91 35.55803.39106.65
SOIL          P-Y 803.39533.25803.391066.5
SOIL P-Y      SLOCSM    7  98.43       .006
SOIL          P-Y   0.00  0.00259.40  3.56372.18 10.67563.91 35.55812.03106.65
SOIL          P-Y 812.03533.25812.031066.5
SOIL P-Y      SLOCSM    7 101.71       .006
SOIL          P-Y   0.00  0.00262.16  3.56376.14 10.67569.91 35.55820.67106.65
SOIL          P-Y 820.67533.25820.671066.5
SOIL P-Y      SLOCSM    7 104.99       .006
SOIL          P-Y   0.00  0.00264.92  3.56380.10 10.67575.91 35.55829.31106.65
SOIL          P-Y 829.31533.25829.311066.5
SOIL P-Y      SLOCSM    7 108.27       .006
SOIL          P-Y   0.00  0.00267.68  3.56384.06 10.67581.91 35.55837.95106.65
SOIL          P-Y 837.95533.25837.951066.5
SOIL P-Y      SLOCSM    7 111.55       .006
SOIL          P-Y   0.00  0.00270.44  3.56388.02 10.67587.91 35.55846.59106.65
SOIL          P-Y 846.59533.25846.591066.5
SOIL P-Y      SLOCSM    7 114.83       .006
SOIL          P-Y   0.00  0.00273.20  3.56391.98 10.67593.91 35.55855.23106.65
SOIL          P-Y 855.23533.25855.231066.5
SOIL P-Y      SLOCSM    7 118.11       .006
SOIL          P-Y   0.00  0.00275.96  3.56395.94 10.67599.91 35.55863.87106.65
SOIL          P-Y 863.87533.25863.871066.5
SOIL P-Y      SLOCSM    7 121.39       .006
SOIL          P-Y   0.00  0.00278.72  3.56399.90 10.67605.91 35.55872.50106.65
SOIL          P-Y 872.50533.25872.501066.5
SOIL P-Y      SLOCSM    7 124.67       .006
SOIL          P-Y   0.00  0.00281.48  3.56403.86 10.67611.90 35.55881.14106.65
SOIL          P-Y 881.14533.25881.141066.5
SOIL P-Y      SLOCSM    7 127.95       .006
SOIL          P-Y   0.00  0.00284.24  3.56407.82 10.67617.90 35.55617.90106.65
SOIL          P-Y 617.90533.25617.901066.5
SOIL P-Y      SLOCSM    7 131.23       .006
SOIL          P-Y   0.00  0.00287.00  3.56411.78 10.67623.90 35.55623.90106.65
SOIL          P-Y 623.90533.25623.901066.5
SOIL P-Y      SLOCSM    7 134.51       .006
SOIL          P-Y   0.00  0.00289.75  3.56415.74 10.67629.90 35.55629.90106.65
SOIL          P-Y 629.90533.25629.901066.5
SOIL P-Y      SLOCSM    7 137.80       .006
SOIL          P-Y   0.00  0.00292.51  3.56419.69 10.67635.90 35.55635.90106.65
SOIL          P-Y 635.90533.25635.901066.5
SOIL P-Y      SLOCSM    7 141.08       .006
SOIL          P-Y   0.00  0.00295.27  3.56423.65 10.67641.90 35.55641.90106.65
SOIL          P-Y 641.90533.25641.901066.5
SOIL P-Y      SLOCSM    7 144.36       .006
SOIL          P-Y   0.00  0.00298.03  3.56427.61 10.67647.90 35.55647.90106.65
SOIL          P-Y 647.90533.25647.901066.5
SOIL P-Y      SLOCSM    7 147.64       .006
SOIL          P-Y   0.00  0.00300.79  3.56431.57 10.67653.90 35.55653.90106.65
SOIL          P-Y 653.90533.25653.901066.5
SOIL P-Y      SLOCSM    7 150.92       .006
SOIL          P-Y   0.00  0.00303.55  3.56435.53 10.67659.90 35.55659.90106.65
SOIL          P-Y 659.90533.25659.901066.5
SOIL P-Y      SLOCSM    7 154.20       .006
SOIL          P-Y   0.00  0.00306.31  3.56439.49 10.67665.90 35.55665.90106.65
SOIL          P-Y 665.90533.25665.901066.5
SOIL P-Y      SLOCSM    7 157.48       .006
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716  SOIL          P-Y   0.00  0.00309.07  3.56443.45 10.67671.90 35.55671.90106.65
717  SOIL          P-Y 671.90533.25671.901066.5
718  SOIL P-Y      SLOCSM   7 157.51       .006
719  SOIL          P-Y   0.00  0.00382.66  1.78549.03  5.33831.87 17.78831.87 53.33
720  SOIL          P-Y 831.87266.63831.87533.25
721  SOIL P-Y      SLOCSM   7 232.94       .006
722  SOIL          P-Y   0.00  0.00485.68  1.78696.85  5.331055.8 17.781055.8 53.33
723  SOIL          P-Y 1055.8266.631055.8533.25
724  SOIL P-Y      SLOCSM   7 232.97       .006
725  SOIL          P-Y   0.00  0.00691.73  1.78992.48  5.331503.8 17.781503.8 53.33
726  SOIL          P-Y 1503.8266.631503.8533.25
727  SOIL P-Y      SLOCSM   7 282.15       .006
728  SOIL          P-Y   0.00  0.00691.73  1.78992.48  5.331503.8 17.781503.8 53.33
729  SOIL          P-Y 1503.8266.631503.8533.25
730  SOIL P-Y      SLOCSM   7 282.18       .006
731  SOIL          P-Y   0.00  0.001041.8  2.962067.3  5.934010.1 11.857181.1 23.70
732  SOIL          P-Y 10447. 47.4010817. 53.33
733  SOIL P-Y      SLOCSM   7 291.99       .006
734  SOIL          P-Y   0.00  0.001078.2  2.962139.7  5.934151.8 11.857442.6 23.70
735  SOIL          P-Y 10851. 47.4011239. 53.33
736  SOIL P-Y      SLOCSM   7 292.02       .006
737  SOIL          P-Y   0.00  0.00573.99  1.78823.55  5.331247.8 17.781247.8 53.33
738  SOIL          P-Y 1247.8266.631247.8533.25
739  SOIL P-Y      SLOCSM   7 390.42       .006
740  SOIL          P-Y   0.00  0.00721.17  1.781034.7  5.331567.8 17.781567.8 53.33
741  SOIL          P-Y 1567.8266.631567.8533.25
742  SOIL P-Y      SLOCSM   7 390.45       .006
743  SOIL          P-Y   0.00  0.00721.17  1.781034.7  5.331567.8 17.781567.8 53.33
744  SOIL          P-Y 1567.8266.631567.8533.25
745  SOIL P-Y      SLOCSM   7 459.32       .006
746  SOIL          P-Y   0.00  0.00750.60  1.781077.0  5.331631.8 17.781631.8 53.33
747  SOIL          P-Y 1631.8266.631631.8533.25
748  *
749  END
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